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RELIGION AND SCIENCE

RELIGION AND SCIENCE

FROM GALILEO TO BERGSON

BY

JOHN CHARLTON HARDWICK

"Philosophy will always be hard, and what it promises even in the end is no clear theory nor any complete understanding or vision. But its certain reward is a continual evidence and a heightened apprehension of the ineffable mystery of life, of life in all its complexity and all its unity and worth."

F. H. BRADLEY, *Essays in Truth and Reality*, p, 106.

LONDON
SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE
NEW YORK: THE MACMILLAN CO.
1920

TO

MY FATHER

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PREFACE

THE chapters which follow are not intended as even a slight sketch of the history of Thought since the Renaissance. Their object is more modest, i.e. to illustrate the thesis that mankind, being "incurably religious," insists (however hopeless the enterprise may sometimes seem) upon interpreting the universe spiritually.

Thus it is quite natural that only a few typical names should find their places here: and often no sufficient reason may appear for one being included rather than another. For instance, in the tenth chapter, T. H. Green, F. H. Bradley, and A. J. Balfour are mentioned, while Martineau and the Cairds are passed over. Needless to say, there was no doctrinal prejudice here. Again, in the fourth chapter, Pascal is dealt with at some length, but Boehme, an equally important thinker, is ignored. And so on.

I should like to acknowledge here my obligation to Dr. Mercer, Canon of Chester, for his advice upon books, especially with regard to material for the final chapters. Also to the Rev. H. D. A. Major, Principal of Ripon Hall, for suggestions about the general plan of the book; and to the Rev. E. Harvey (a mathematical graduate of Trinity College, Dublin, at present studying medicine) for valuable information about the present position of psychic research.

J. C. H.

ALTRINCHAM, *March 23rd*, 1920.

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RELIGION AND SCIENCE

CHAPTER I

INTRODUCTORY. RELIGION AND SCIENCE

NUMEROUS attempts to define religion have made it evident that religion is indefinable. We may, however, say this much about it, that religion is *an attitude towards life:* a way of looking at existence. It is true that this definition is too wide, and includes things which are not religion—there are certain attitudes to life which are definitely anti-religious—that of the materialist, for instance. However, it will serve a purpose, and we can improve upon it as we proceed. It is a mistake to put too much faith in definitions: at any rate it is better to have our definitions (if have them we must) too wide than too narrow.

Science is, fortunately, much easier to define. *Accurate and systematic knowledge* is what we mean by science —knowledge about anything, provided that the facts are (so far as possible) accurately described and systematically classified. Professor Karl Pearson, the highest authority on the principles of scientific method and theory, writes:

"The man who classifies facts of any kind whatever, who sees their mutual relation and describes their

sequences, is applying the scientific method and is a man of science. The facts may belong to the past history of mankind, to the social statistics of our great cities, to the atmosphere of the most distant stars, to the digestive organs of a worm, or to the life of a scarcely visible bacillus. It is not facts themselves which make science, but the method by which they are dealt with. The material of science is co-extensive with the whole physical universe, not only that universe as it now exists, but with its past history and the past history of all life therein. When every fact, every present or past phenomenon of that universe, every phase of present or past life therein, has been classified, and co-ordinated with the rest, then the mission of science will be completed."[1]

Science, then, is systematic and accurate knowledge ; and when we have systematic and accurate knowledge about everything there is to be known, the programme of science will be complete. This is only to say that the task it has set itself is one that will never end.

So much, then, for our definitions. Religion is " an attitude to life " : science is " systematic and accurate knowledge." How does the one affect the other ? What are the relations between the two ? That is the topic which will occupy our attention during the chapters that follow. To answer the question properly will involve a certain amount of acquaintance with the history of ideas. We must first put the preliminary question : How, as a matter of fact, have men's scientific ideas affected their religious ideas (or *vice versa*) in times past ? Having tried to answer this question, we shall be in a better position to approach the religious problem as it presents itself to-day.

[1] *The Grammar of Science*, pp. 12, 13.

Meanwhile a few remarks of a general character will not be out of place. It is evident that " science " can hardly fail to affect " religion." Systematised knowledge necessarily affects an individual's (or a society's) attitude to life—either by broadening and elevating that attitude, or by debasing it. Our knowledge, or what we believe to be such, tends to create certain preconceptions which make our minds hostile to certain beliefs or ideas. A man reared from his cradle on mechanical science will tend to regard miracles with suspicion ; if he be logical (as he generally is not) freedom of the will, even in the most limited sense, will appear chimerical. Nor will his general attitude to life remain unaffected by his views on these points.

Systematised knowledge may thus conceivably come into conflict with the pre-suppositions or the ideals of some particular religion. It is then that a " religious problem " arises. A religion indissolubly associated with a geocentric conception of the universe would tend to become discredited as soon as that conception had been disposed of by " systematic knowledge." Science may even tend to produce an attitude to life hostile not only to a particular religion but to *all* religion. If materialism should ultimately be found to be consistent with systematic and accurate knowledge, it is difficult to see how any attitude to life which could be appropriately described as " religion " could survive. The religious problem would then, at any rate, cease to trouble us. The religious apologists would be free to turn their attention to matters of more moment. But it is not only with the cessation of religion that the religious problem slumbers. There are certain happy periods when religion flourishes undisturbed by obstinate questionings. These classical

ages of religion exist when systematised knowledge seems to support the contemporary religious outlook—when science and religion speak with one voice. Such unanimity seems to us to-day too good to be possible, but that is only because our own age is exceptional—not because those happier ages were exceptional; they, in fact—if we trace history backwards—would seem rather to have been the rule.

Primitive man, it would seem, was troubled by no discords of the kind which disturb our peace. His systematic knowledge—such as it was—was entirely in accord with his religion, the two were, in fact, in his case practically one. His science *was* his religion. It may not have been very sound science, nor very elevated religion, but it served his purpose admirably. He was too busy with the struggle for survival to indulge in speculation. His religion was severely practical, and he was faithful to it because experience seemed to indicate that it paid.

But the Stone Age hardly deserves (in spite of its freedom from religious difficulties) to be described as one of the classical ages of religion; absence of struggle does not necessarily mean richness of life. There are ages which better deserve that appellation. There are times when all existing culture—even of a high level—is closely associated with the current religion, endorses its ideals, sanctions its hopes, puts the stamp of finality upon its faith. Such an age cannot perhaps hope to be permanent; for life means movement, and movement upsets equilibrium, and human knowledge tends to increase faster than the human mind can adapt itself to it or digest it. But such ages are looked back upon with regret when they are past, they shed a golden radiance over history, their tradition lingers,

they even leave behind them monuments of art and literature which are the wonder, and the inimitable models, of succeeding generations.

Such an epoch was that which left to us our Gothic cathedrals. These are the creation of one of those classic ages " when all existing culture is cast or bent in obedience to the religious idea." When scientist, scholar and ecclesiastic spoke with one voice and listened to one message; when prince and peasant worshipped together the same divinities; when to be outside the religious community was to be cut off from the brotherhood of mankind. " The Church " was then co-extensive with civilisation: those without the fold were barbarians, hardly worthy of the name of man.

That time of splendid harmony, however, is now past; no lamentations will restore it. We have reached another world.

But it need not remain only a memory; it ought also to serve as an inspiration. The conditions of affairs during the classic ages of religion, however impossible at the moment, must remain our ideal. Head and heart must some day speak again with one voice, our hopes and beliefs must be consistent with our knowledge. Science must sanction that attitude towards existence which our highest instincts dictate.

It is only too likely that this consummation is yet distant. Yet even if our generation has to reconcile itself to spiritual and moral discord, it should never overlook the existence of a happier ideal, and even the possibility of its fulfilment. Fortunately for the interests of religion, men feel they *must* effect some kind of a reconciliation between the opposing demands which proceed from different sides of their nature.

Each for himself tries to approximate science and religion, and the struggle to do this creates in each individual spiritual life. Tension sometimes creates light, and struggle engenders life. So long as there are men sufficiently *interested* in religion to ask for a solution of its problems, religion will remain superior to the disintegration towards which all discord, if unchecked, proceeds.

It is sometimes said that the religious harmony of the Middle Ages, of which we have spoken, having been due to imperfect knowledge, is never likely to repeat itself, unless we sink back into the ignorance of barbarism: and (it is urged) we know too much to be at peace. Having tasted of the fruits of knowledge, the human race is cast forth from its Paradise. This view is unduly pessimistic. There is no valid reason for excluding the possibility that our knowledge of reality and those ideal hopes which constitute our religion may actually coincide. Religion and science, approaching the problem of existence from contrary directions, may independently arrive at an identical solution. That the two actually do attack the enigma from different sides has led many people to regard the two as hostile forces. Such is not the case. Religion and science regard reality from different angles, but it is the same reality that is the object of their vision, and the goal of their search.

Religion looks at existence as a whole, and attempts to determine its meaning and value for mankind. Religion, we may say, stands at the centre of existence, and regards reality from a central position.

The province of science, on the other hand, is not to take so wide a survey, but to gain knowledge piecemeal: to locate points inductively, and thus to plot

out the curve which we believe existence constitutes. If the *loci*, as they are successively fixed, seem to indicate that the curve is identical with the circle which religion has already intuitively postulated, the problem of existence would have been solved. Science and religion working by different methods would have described the same circle. When science has completed its circle, its centre may be found to stand just at the point where religion has always confidently declared it to be. Knowledge and faith will then, and not till then, be one.

CHAPTER II

THE DISSOLUTION OF THE OLD SYNTHESIS

We have seen that there are classic religious periods when faith and knowledge have seemed to approximate to one another. The Middle Ages in Europe constituted such a period; no "Religion *v.* Science" controversy could then be said to exist; the best scientific knowledge of the time seemed to sanction the popular religious notions. Learned and lay thought in the same terms; the wolf lay down with the lamb.

The Old World-Scheme.—It is important to grasp the main features of a world-scheme which as late as the fifteenth century passed everywhere without criticism.

The father of it was Aristotle. His conception of the universe rested upon the plain contrast, which strikes the unsophisticated observer, between the unembarrassed and regular movements of the heavenly bodies and the disordered agitations of sublunary things. Hence the heavenly region was eternal, and the region of earth transitory: yonder, the motions that take place are eternal and regular; here, motion and rest alternate, nothing "continueth in one stay."

At the centre of the universe stands Earth: hence we mount through three sublunary strata to the region

of the celestial ether, which is purer as distance from the Earth increases.

These strata form three concentric " spheres " which, solid yet transparent (like crystal), revolve around the earth. The first contains the moon—like a fly in amber; the second, the sun ; the third, the fixed stars ; which last sphere is also the first of several successive heavens, the highest of which is the seat of Deity.

This Aristotelio-Ptolemaic system[1] formed a coherent framework for biblical world-notions. Here too, earth stands still while sun and stars revolve ; here, too, the seat of Deity is the highest heaven. This was an universe where men could feel their feet on firm ground ; their minds found rest in those simple and definite notions which make religious conceptions easy to understand and accept ; their imaginations were not yet disturbed and disquieted by thoughts of space and time without end and without beginning.

AQUINAS.—Such was the " world of nature," the theatre for that " world of grace " which Revelation spoke of, and which led eventually to the eternal " world of glory " in which the faithful should have their portion. *Natura, gratia, gloria* was the ascending series (like another set of celestial spheres), and the whole economy was elaborated into a logical system, known to the historians of thought as Scholasticism : a philosophy which found its most perfect and memorable expression in Thomas Aquinas (1227–74), the *doctor angelicus* of Catholic theology, canonised less than fifty years after his death. The *Summa Philosophica,* where Aquinas deals with the rational foundations of a Christian Theism, and the *Summa Theologica,* where he erects his elaborate structure of

[1] Ptolemy of Alexandria : 127–151 A.D.

theology and ethics, together constitute " one of the most magnificent monuments of the human intellect, dwarfing all other bodies of theology into insignificance."[1] In him the erudition of an epoch found its spokesman; he was the personification of an intellectual ideal. To his contemporaries he stood beyond the range of criticism. In the *Paradiso* (x.8.2) it is St. Thomas who speaks in heaven.

Nevertheless, the Scholastic world-scheme, though based on " the evidence of the senses, the investigations of antiquity, and the authority of the Church," and though Aquinas had set the seal of finality upon it, was destined to gradual discredit and ultimate extinction.

Disintegration Begins.—It was open to attack on two sides. *Either* observations or calculations might be brought forward, conflicting with it, or making another conception possible or probable: *Or* the validity of conventional ideas of space might be disputed.

The latter type of criticism was the first to occur. Nicholas Cusanus (1401–1464), an inhabitant of the Low Countries, subsequently bishop and cardinal, developed unconventional notions about Space. He suggested that wherever man finds himself—on earth, sun, or star—he will always regard himself as standing at the centre of existence. There is, in fact, no point in the universe which might not appropriately be called its centre, and to say that the earth stands at the centre is only (what we should now call it) an anthropomorphism. So much for *place;* and similarly with *motion.* Here, too, there is no absolute standard to apply:

[1] J. M. Heald in art. " Aquinas " in *Encyclopædia of Religion and Ethics.*

motion may exist, but be unnoticed if there be no spot at absolute rest from which to take bearings.

"We are like a man in a boat sailing with the stream, who does not know that the water is flowing, and who cannot see the banks: how is he to discover whether the boat is moving?" Cusanus, in fact, denies the fundamental Aristotelian dogma that the earth is the central point of the universe, because, on general grounds, there *can* be no absolute central point. This gave a shock to the "geocentric theory" from which it never recovered.

Worse shocks, however, were to come. The name of the man who actually (as Luther complained) turned the world upside down, is notorious enough. Poles and Germans alike have claimed the nationality of Nicolaus Copernicus (1473–1543); who, having been a student at Cracow and in Italy, became a prebendary in Frauenburg Cathedral.

The New Astronomy.—The general criticisms of Cusanus were elaborated by Copernicus. The senses cannot inform us (when any motion takes place) *what* it is that moves. It may be the thing perceived that moves, or the percipient—or both. And it would be *possible* to account for the movements of celestial bodies by the supposition that it is the earth that moves, and not they. Copernicus' whole work consisted in the mathematical demonstration that this hypothesis could account for the phenomena as we observe them. In fact, when these demonstrations were eventually published (it was only on his deathbed that Copernicus received a copy of his book—and he had already lost consciousness) they were introduced by a discreet preface, which intimated that the whole thing might safely be regarded as a *jeu d'esprit*

on the part of an eccentric mathematician. And this editorial *caveto*, though written by another hand, preserved the Copernican theories from the notoriety that might otherwise have attended, and afterwards did attend, them.

Copernican conceptions were semi-traditional. The sun displaces the earth as the central point of the universe: around it revolve the planets—including the earth; and, at an immeasurable distance, is the immovable heaven of the fixed stars. Copernicus left it an open question whether or no the universe was infinite. It remained for his successor, the greatest of the Renaissance thinkers, Giordano Bruno (1548–1600) to declare it to be limitless, and to contain an infinity of worlds like our own. The fixed stars became, for him, suns surrounded by planets. The traditional distinction between the celestial and sublunary spheres had vanished. The bewilderment and indignation excited by these ideas, revolting to the conscience of his time, cost their author his life.

Galileo.—The criticism of the old world-conceptions was, however, to be based on yet more sure ground by one who relied, not on general considerations, but on observation and experiment. Galileo (1564–1642) studied philosophy, physics, and mathematics at Pisa; and as professor expounded the old astronomy long after he had ceased to regard it as adequate. Not until 1610, after he had constructed a telescope and observed the satellites of Jupiter, did he openly confess his adherence to the system of Copernicus. The observation of sun-spots and the phases of Venus confirmed his opinion.

Aristotelian astronomers declined to witness these phenomena through his telescope, and perhaps Galileo

was right in observing with a sigh that were the stars themselves to descend from heaven to bear him witness his critics would remain obdurate.[1]

It was not until 1632 that a complete exposition of the conflict between the two world-systems was produced by Galileo. It took the form of a dialogue between three speakers—conservative, mediating, and extreme. The views of the author, however, were not sufficiently concealed, the book was prohibited, and Galileo summoned to Rome, and upon threat of torture, subdued into a recantation and a promise not to offend in the future. That Galileo perjured himself is not open to doubt, nor did he change his convictions. A subsequent work, surreptitiously printed in Holland, contained the same heresies expressed with less reserve.

The New Physics.—It might be said, then, that the fabric of the universe had been reconstructed by the thinkers whose explorations we have hitherto followed. This achievement, however, though sufficiently startling in itself, was not the only, and perhaps not the most important, of their performances. The question still awaited solution: *By what forces and laws is the new world-system maintained in activity?*

The traditional reply had been that the universe was kept in motion by the operation of the Deity. While the truth of this reply was not questioned by the advocates of the "new" science, it did not seem to them to dispel the obscurity surrounding certain points about which they required information. It was Galileo who observed that the appeal to the divine will

[1] Monks and theologians were betrayed into some controversial asperities. "Ye men of Galilee, why stand ye gazing up into heaven" formed the appropriate text for a sermon by a Dominican.

explains nothing just because it explains everything. It takes the inquirer back too far—behind those details of method which arouse his speculative interest.

This desire to understand those methods of operation which natural objects appear to follow, led philosophers to enunciate certain "laws" about them. These served as "explanations" of particular classes of phenomena. It was the phenomena of *motion* that especially attracted their attention; and many ingenious experiments were performed by Galileo, in particular, which led him to conclusions which then seemed paradoxical, but now serve as axioms of physical science; for "the laws of motion contain the key to all scientific knowledge of material nature." When Galileo, after careful experiment, established the proposition that a body can neither change its motion of itself, nor pass from motion to rest, the fundamental "law of inertia"—of such incalculable importance to the development of modern physics—had been established.

An Automatic Universe.—A proposition of this kind may not at first seem to involve important philosophical or theological consequences. But we only have to consider that it provided a natural explanation of the continued and untiring motion of the heavenly bodies. It did not, it is true, explain how that motion arose; but the motion being "given," it had now been shown how it would, in the absence of obstructions, be perpetual. In fact, speculations of this kind opened up the way to the *mechanical* explanation of nature, a theory which had been already speculatively held by Leonardo da Vinci, who is already convinced that "necessity is the eternal bond, the eternal rule of Nature."

Science and Mathematics.—It was not only, however, the spectacle of a system running automatically that suggested to observers a mechanical theory to explain it. There was also the fact that phenomena were observed to occur in accordance with certain simple mathematical laws. Galileo's experiments with falling bodies led him to foreshadow principles which were afterwards elaborated and fully demonstrated by Newton, who may be said to have been the first to construct a mechanical universe. The principle had already been formulated by a contemporary of Galileo—Johannes Kepler—in the axiom *ubi materia, ibi geometria.*

Results.—The thinkers whose speculations have engaged us were indeed responsible for creating a revolution in ideas. For a finite universe whose centre was the earth, and which was kept in motion by the operation of the Deity, they had substituted the conception of illimitable space sown with innumerable systems like our own ; and had created the beginning of a mechanical conception of nature.

The New Logic.—But it was not only the scientific dogmas of the old system that had been so rudely overthrown—the very principles upon which those dogmas rested had been submitted to a destructive criticism. The new science produced a new logic. This order of events is not unusual : first, the new scientific discoveries, and then in the wake of the discoverers, comes the innovating critic who systematises the logical or scientific methods to which the new knowledge seems to have been due. First, Kepler and Galileo, who used the " inductive " method, and then Lord Bacon of Verulam (1561–1626), who discovered the inductive logic, and established it as a system.

Francis Bacon.—Bacon's doctrine may be summarised by his own epigram, "If a man begin with certainties, he shall end in doubts; but if he be content to begin with doubts, he shall end in certainties." Which is really a criticism of what is known as the a priori method, whereby the inquirer starts with certain predefined theories to which all phenomena must conform, and which all experience must verify. If facts will not suit the particular theory, so much the worse for the facts: one could always disregard them, and apply a blind eye to Galileo's telescope. Such is always the procedure of the dogmatic mind, which is already so certain of the truth of its notions that no evidence can persuade it to the contrary. But it is not by such means that knowledge is advanced, and it was for a reversal of these that Bacon pleaded.

Leonardo da Vinci had already anticipated the Baconian logic (which did not wait for Bacon until it was applied) when he laid down the proposition that wisdom was the daughter of experience, and rejected all speculations which experience, the common mother of all sciences, could not confirm. Hence, knowledge was the product of time; the process of collecting material for a judgment must often be slow, but the results were worth the labour—these would not be speculative, but true. Nor need it be supposed that Bacon excluded imagination from playing a part in increasing knowledge, he did not plead *only* for a mechanical collection of material. It is imagination which in face of abundant material creates the hypothesis which accounts for it being what it is. And he was prepared to admit the value of preliminary hypotheses which might be replaced as further facts were collected, or as insight became more clear. Here,

too, Bacon describes the method followed by modern science.

Prestige of New Methods.—And so, by the time when Bacon had laid down his pen after writing the *New Logic*, the work of discrediting the old system, elaborated with such ingenious industry by Aquinas, was tolerably complete. The new science had begun already to be fruitful in results, both practical and speculative. The successors of Galileo and of Bacon applied the new principles with vigour, and reached astonishing results. Justified by these, the new methods secured a prestige which has not decreased for three centuries.

CHAPTER III

GROWTH OF THE MECHANICAL THEORY

DECLINE OF SCHOLASTICISM.—By the time of Lord Bacon, the Scholastic philosophy might have been described as extinct; it no longer survived as a living system. The loss was a serious one to mankind, which was poorer by the discrediting of an authoritative body of thought, a possession it seems ill able to dispense with. The Baconian philosophy was an imperfect substitute; it was little more than a system of enquiry, a manual of scientific procedure, for Bacon himself was not in the philosophical sense a profound or constructive thinker, though he was one of those men of talent who can give utterance to the tendencies of an epoch.

THE NEW PHILOSOPHY.—The task, however, of constructing a new philosophy of the universe was courageously taken in hand by a succession of thinkers, and the energy of thought which the great problem generated is characteristic of perhaps the most vigorous century of European history—the seventeenth.

The tendency of the new discoveries in science had not been obscure, and Modern Philosophy starts with an attempt to represent the universe as a self-working machine—a co-ordinated whole, throughout which the principles of mathematics are universally valid. The trend of ideas set in motion by the new discoveries in

astronomy seemed to point in this direction. But to introduce mechanics into the celestial regions, though an important step, was but a beginning. Mechanics must be *universally* valid—even in the human body—or the new teaching was vain. Exceptions may prove a rule, but they destroy a philosophy.

THE SUBJUGATION OF PHYSIOLOGY.—It was an Englishman who provided the necessary facts to fill the gravest gap in the mechanical theory. It was already known in the previous century that the blood of animals circulated throughout the body; the existence and use of veins and heart-valves was also known, but it was William Harvey (1578–1657) who discovered the heart to be the organ responsible for *maintaining* the circulation of the blood, by purely mechanical means. This was a fact of the utmost significance. In the sphere of physiology, where theories about mysterious powers of blood or soul had been hitherto authoritative, it effected a revolution. Indeed it is true to say that Harvey "is to physiology what Galileo was to physics." He proved that "the general laws of motion are valid within as well as without the organism"—an important extension of the mechanical theory.

DESCARTES.—Among the leading men who accepted Harvey's theory, one of the first was René Descartes (1596–1650). Well might this thinker welcome it, for it was a most important contribution to the imposing philosophic fabric for which he was industriously collecting materials. Descartes, apart from his philosophical speculations, is an interesting character, being a Frenchman of noble birth who was educated by the Jesuits, saw something of contemporary life in Paris, served as a military officer in Holland and

Germany, and made some original discoveries in mathematics.

The mathematical mind, accustomed as it is to deal with highly abstract ideas, takes kindly to metaphysics. And it very often solves the mystery of the universe by expressing all its contents in mathematical terms. Such, at least, was Descartes' method. The simplest and clearest ideas which we can have of anything are mathematical, i.e. extension and mobility. And it is by concentrating our attention upon this simple and mathematical aspect of things that we shall arrive at a proper understanding of all that goes on in the material world.

Universality of Mathematics.—A phenomenon was, in Descartes' eyes, "explained" only when a "cause" which is its exact *mathematical equivalent*, has been indicated. The "cause" and the "effect" are two sides of a mathematical equation (*Causa aequat effectum*). Anything that happens in the material world (the fall of a stone, the beat of a heart, the rising of the sun) is really nothing more than a redistribution of portions of that sum of motion which, once generated at the Creation, has remained unaltered, and unalterable, in the universe ever since. The sum of motion is constant, there can be no addition to or subtraction from it. In this sense it would be true that "there is nothing new under the sun": only ever-new distributions of the old.

The Universe a Machine.—Once assume that all phenomena can be interpreted in terms of motion, and add the proposition (already enunciated by Galileo) that motion once set going will proceed for ever, unless some impediment from outside intervenes, and the mechanical view of the universe is complete. The

universe is a machine, i.e. a thing that works (1) according to mathematical principles, (2) automatically.

Elaborations of the Mechanical Theory.—The importance of Descartes lies not in his having invented this conception (we have already seen it in the hands of Leonardo da Vinci, Galileo, and others), but in his having elaborated it. This he did in two directions: (1) he attempted to supply a mechanical theory of the evolution of the world-system; *i.e.* to show how the heavenly bodies came into being by natural and mechanical processes; (2) he applied the mechanical theory to organisms; animals and men were complex machines. (Here, as we have seen, the discovery of Harvey was of prime importance.)

It is hardly necessary to describe at length Descartes' mechanical theory of the evolution of the world-system, though an interest attaches to it as being the ancestor of the modern "nebular hypothesis." Matter in whirling motion around fixed centres is the original *datum* from which Descartes evokes the universe. With regard to the mechanical theory of organisms, Descartes developed it at some length in various treatises. All the functions and actions of animals were regarded by him as entirely involuntary and mechanical. "That the lamb flees at the sight of a wolf happens because the rays of light from the body of the wolf strike the eye of the lamb, and set the muscles in motion by means of the 'reflex' currents of the animal spirits."

In the case of human beings, owing to the phenomenon of "consciousness," Descartes felt compelled to assume a "soul"—a *thinking* substance in reciprocal action with the *material* substance (of the brain).

This, too, is an anticipation of the modern theory of "psycho-physical parallelism."

CARTESIANISM.—The ideas of Descartes had considerable influence among his contemporaries, and Cartesianism, as it was called, became fashionable in intellectual circles. It developed a tendency towards free enquiry and independent thought; and it was even more significant as an atmosphere than as a system of ideas. Though in this respect too, it was both important and vital; as we have observed, modern mechanical theories find their parent in Descartes.

Nor was it only, we may remark, among philosophers and men of science that Cartesian ideas were popular; they were accepted and elaborated by the religious thinkers who hoped to harmonise and humanise theology and science. Pascal, Bossuet and Fénelon, the finest minds in the French Church, were eager Cartesians.[1]

This aspect of the matter, i.e. the significance of Cartesianism for religion, we can for the present postpone.

RESULTS SO FAR.—Successive breaches in the Scholastic system have now been noted. Copernicus had introduced a new astronomy, Galileo a new physics, Descartes (with the help of Harvey) a new physiology, and the beginnings of a new psychology.

CONTRIBUTIONS OF HOBBES.—The step that remained was taken by an Englishman, Thomas Hobbes (1588–1679), who attempted to provide a system of

[1] In spite of this, however, Descartes' works, in 1663, appeared in the Index of forbidden books: and his doctrines were banned by Royal decree from the French universities. Jesuit influences, which were not at all favourable to *native* religion in France (or elsewhere!), may have been responsible for this obscurantist policy.

ethics and a theory of politics upon a purely naturalistic basis. Hobbes was a particularly energetic thinker. He worked out a psychology of the feelings, which reduced everything to the impulse of self-preservation and the instinct for power. Men were induced by these instincts to agree to certain rules of conduct, for the sake of expediency. Social life seems essential if men are to live together—the instinct of self-preservation demands it—and social life in turn demands certain renunciations: thus fidelity, gratitude, forbearance, justice, etc., must be practised.

Thus Hobbes attempted to banish all mysterious or obscure forces from morality, which was the characteristic and inevitable product of human nature and human circumstances. This way of looking at things seemed strange to all, and even revolting to some, of Hobbes' contemporaries. As the mystical powers of motion which the Scholastics had believed in were banished by the new physics and the new physiology, so the new psychology could allow of no mystical faculty which can decide in all problems of good and evil.

With Hobbes, then, a naturalistic view of the universe may be said to have been tolerably complete: it embraces physics, psychology, and ethics. There still remained, of course, a number of gaps in scientific knowledge, and consequently any philosophy based thereupon could not yet be regarded as secure. These gaps, however, as research proceeded and successive discoveries were made, tended to diminish both in size and quantity.

Newton.—The seventeenth and the early eighteenth centuries were fruitful in revelations of this kind, and natural knowledge steadily and even rapidly progressed.

And one thinker, who may be regarded as a link between the seventeenth century and that which succeeded it, may now claim our attention.

The name of Newton (1642–1727) is as familiar to Englishmen as that of Shakespeare, and the discovery by him of the "law of gravitation" is one of those scraps of information which we acquire, and perhaps fail to understand, in early childhood.

Newton's scientific method is a no less important aspect of his work than its results. The *Principia,* in which he gave his discovery to the world, is "a model for all scientific investigations which has never been surpassed." It was, indeed, a brilliant application of the principle of inferring the unknown from the already known, without any dogmatic leaps in the dark. The principle with which he began was that what is true in the narrower spheres of experience (e.g. in the case of an apple falling) is true also in the wider spheres (e.g. in the movements of the celestial bodies). He then made a careful mathematical deduction of what would happen in the case of the planets, assuming that the laws of falling bodies on the earth were applicable to them also. And he concluded by showing that what would happen according to mathematics under this assumption *actually does happen.* The conclusion follows that the same force, i.e. "attraction," operates in both cases. It is no wonder that this final and successful operation was performed by Newton "in a state of excitement so great that he could hardly see his figures."

Significance of His Discovery.—The philosophic importance of the discovery that the motions of the planets may be explained by the "law of gravitation" was twofold. In the first place, it now became possible

to understand how the universe held together (a problem which the new astronomy had not solved); and in the second place, the theory constituted a large extension of the mechanical view. It demonstrated that "the physical laws which hold good on the surface of the earth are valid throughout the universe, so far as we can know anything of it." Thus the area of existence in which physical law held good was at once infinitely widened. The mechanical theories of Galileo, Descartes, and others, not only received confirmation, but became more comprehensive than before.

So that Newton may be said to have put the finishing touch upon the achievements of his predecessors, and to have crowned their labours with success. And his work has the characteristic of permanency: his "gravitation formula" has stood the test of time. "It still stands there," says a careful and authoritative writer, "as almost the only firmly established mathematical relation, expressive of a property of all matter, to which the progress of more than two centuries has added nothing, and from which it has taken nothing away."[1]

Religious Corollaries.—It would be a profound mistake to assume that the creators of the mechanical view, as it has hitherto met us, were animated by any hostility to religion. Nor did they believe their theories to involve any disastrous consequences in that sphere.

The new astronomy of Copernicus had actually been made the basis of a spiritual view of the universe by the profound genius (both philosophical and religious) of Giordano Bruno. And the fact that

[1] Merz, *History of European Thought in the Nineteenth Century*, Vol. I, p. 384.

the ecclesiastical authorities rejected his view need not divest it of importance or of value in our eyes. Bruno's own faith was not disturbed by the infidelity of his persecutors. "Ye who pass judgment upon me feel, maybe, greater fear than I upon whom it is passed," were his last words to them. Had they *believed*, they need not have been afraid, and might have been content with the policy of Gamaliel.

As for Descartes and Hobbes, their notions were no doubt distasteful to conservative minds (the Jesuits were no friends to either), but Descartes regarded himself, and would fain have been regarded by others, as a good Catholic; and Hobbes, theologically, was what in these days we might call a Liberal Protestant. Cartesianism, as we have seen, came to be a name for a type of thought which studied to harmonise science and theology, and one of the most profound religious geniuses of any age—Pascal, was (as we have seen) a Cartesian.

As for Newton, his view of the universe was essentially a religious one, though he did not allow theological speculations to intrude upon his strictly scientific work. His attitude is indicated by a reply to the inquiry of a contemporary theologian as to how the movements and structure of the solar system were to be accounted for.

"To your query I answer that the motions which the planets now have could not spring from any natural cause alone. . . . To compare and adjust all these things together (i.e. quantities of matter and gravitating powers, etc.) in so great a variety of bodies, argues the cause to be not blind and fortuitous, but very well skilled in mechanism and geometry."[1]

[1] Quoted by Ward, *Naturalism and Agnosticism*, p. 4.

Still, the mechanical view contained within it sinister possibilities ; and the instincts of conservative thinkers were not altogether at fault. The mechanical view in itself need not be hostile to a spiritual and rational religion (though it is fatal to most forms of superstition) ; and yet that view can be used in the interests of anti-religious prejudice—and, as we shall see, it was so used, and with considerable effect.

Meanwhile, however, we shall pass on to consider the work of three thinkers who are typical of a revolt from what was in danger of becoming the all-absorbing tyranny of mechanics. This reaction (for so it may be termed) we shall proceed, in the following chapter, to examine.

CHAPTER IV

SEVENTEENTH-CENTURY REACTIONS

A Law of Thought.—Whenever a tendency of thought has been vigorously prosecuted for any length of time, a reaction invariably displays itself. This rule is illustrated by the history of thought in the seventeenth century. Mechanical categories, as we have seen, had been steadily extending themselves for the better part of two centuries, and with the materialism of Hobbes the process seemed fairly complete.

Meanwhile, however, human thought began to explore other avenues. Though reaction from mechanical ways of thinking did not (at any rate, in the circles with which we are concerned) take the form of an obscurantist retreat into prejudice or superstition, the results of the new science and its attendant mechanistic philosophy served as a base for further explorations. The principles which Descartes and Hobbes had laid down were criticised by being carried out to their logical conclusions.

Spinoza.—The philosopher with whom we shall first concern ourselves was a Jew of Spanish extraction, living in what was then the freest country in Europe—Holland. Spinoza (1632–1677) was undoubtedly the greatest thinker of his own age, which was highly fertile in that respect, and he still stands as one of the most notable figures in the long history

of European thought. Not only is his outlook comprehensive, and his thought many-sided, but his standpoint was "detached" to a degree hitherto unknown. He was untainted, so far as a human being ever can be, by "anthropomorphism"; he endeavoured to transcend the merely human outlook. Here is always the dividing line between the great and the merely mediocre thinker.

SPINOZA'S METHOD.—Spinoza's philosophical ancestry may be traced back to Bruno, whose acquaintance we made in a previous chapter, but in whose company we did not long remain. This highly original mind had already, by the doctrine of the infinitude and the divinity of nature, shown how the concept of God and the concept of nature might be closely bound up together. By similar means, Spinoza hoped to indicate the reality of the spiritual, without disturbing the mechanical world-conception which the new science and new philosophy had created between them. He wished somehow to find God not outside, but *in* Nature; not in disturbances of the order of Nature, but *in that order itself*.

THE TERM NATURE.—It would be a misapprehension to suppose that the terms "God" and "Nature" are regarded by Spinoza as interchangeable, though his numerous critics were accustomed to declare that this was the case. On the contrary, Spinoza, in order to anticipate the misunderstanding which he saw might arise on this point, reintroduced into philosophy a pair of terms which the Scholastics had long before brought into currency, but which had since fallen out of fashion—*Natura naturans* and *Natura naturata*. We might perhaps translate the former of these, "Creative Nature," and the latter, "Created

Nature." *Natura naturans* is equivalent to "Nature as a creative power," or "The creative power immanent in Nature." *Natura naturata* is equivalent to "Nature as it is when created," or "The results of the creative power immanent in Nature." And the *Natura naturans* is active in the *Natura naturata* at all points: the creative power is immanent in creation. As Spinoza puts it in one of his letters:

"I assert that God is (as it is called) the immanent, not the external cause of all things. That is to say, I assert with Paul, that in God all things live and move. . . . But if any one thinks that the *Theologico-Political Treatise* (one of his works) assumes that God and Nature are one and the same, he is entirely mistaken."[1]

Thus, for Spinoza, the order of nature, which had seemed to so many of his contemporaries, from the religious point of view, such a devastating conception, as leaving no room for the spiritual, was itself only explicable if interpreted spiritually.

"Whatever is, is in God, and nothing can exist or be conceived without God" (*Ethics* i. 15) sums up his attitude. All things may be, as the new science taught, 'determined' but they are determined "by the necessity of the divine nature" (*Ethics* i. 29).

The "Ethics."—Spinoza may rightly be termed a man of one book. In his *Ethics* is to be found a complete and final expression of his philosophy. "How boundless," says Goethe of this great book, "is the disinterestedness conspicuous in every sentence, how exalted the resignation which submits itself once for

[1] Höffding, *History of Modern Philosophy*, Vol. I, p. 315.

It may set the scruples of some at rest to be reminded that Aquinas himself applied the term *Natura Naturans* to God as the cause of all existence. Eckhart and Bruno had made a similar application of it (cf. Martineau, *Study of Spinoza*, p. 226).

all to the great laws of existence, instead of trying to get through life with the help of trivial consolations; and what an atmosphere of peace breathes through the whole!"

According to its teaching the true happiness and highest activity of men is to be found in what Spinoza terms "the intellectual love of God." The phrase seems to have been used to designate that full and clearer knowledge which is aware that we ourselves and all the conditions of our life are determined by the infinite Nature, by God Himself, who moves in us as well as in all things acting upon us. The initiated no longer regard themselves as single, isolated, impotent beings, but as included in the divine nature. Themselves and all things are seen under the form of eternity. This thought is, according to Spinoza, the fruit of the highest activity of the human mind; this is the *amor intellectualis dei;* and the supreme good for man.

His doctrine of immortality is bound up with this intellectual form of religious mysticism—knowledge of God involves participation in His immortality:

"Death is the less harmful the more the mind's knowledge is clear and distinct, and the more the mind loves God. . . . The human mind may be of such a nature that the part of it which we showed to perish with the body may be of no moment to it in respect to what remains."

He who is "affected with love towards God" has a mind "of which the greater part is eternal." Thus the soul achieves its emancipation by identifying itself with God—who is the object of its knowledge and love. The path is arduous, and the closing passage of the *Ethics* admits this:

" If the road I have shown is very difficult, it can yet be discovered. And clearly it must be very hard when it is so seldom found. . . . But all excellent things are as difficult as they are rare."

SPINOZA AND RELIGION.—It is interesting to note that Spinoza, though a "free-thinking" Jew, adopts towards the fundamental dogma of Christianity an attitude which approximates to the classical expression of it in the Fourth Gospel. He held that " God's eternal wisdom, which reveals itself in all things, and especially in the human mind, has given a special revelation of itself in Christ."

Perhaps his ethic, like that of the Stoics, with whom he had so much in common, was better adapted to satisfy the needs of the philosopher than of the ordinary man. But, in the seventeenth century, it was the philosophers and learned men that were in need of a spiritual interpretation of the universe; common men had theirs already, in the traditional pietism which philosophers are often too ready to despise. To Spinoza—and this is one of the many indications of the genuine profundity of his thought—the simple believers seemed already to be in possession of too much of the truth for it to be desirable or profitable for them to indulge in speculation. To the question of his landlady at the Hague as to whether she could be saved by the religion which she professed, his reply was that her religion was good, that she should seek no other, and that she would certainly be saved by it if she led a quiet and pious life.

SPINOZA'S PERSONALITY.—The figure of Spinoza stands as one of the most imposing and attractive in the whole history of philosophy, and his was an unworldliness, a simplicity, and a humility purely

Franciscan. Like all Jews then, he knew a trade—that of lens grinding—and by this he was able to live frugally, while he elaborated his thought. He dedicated his life to the labour of quiet contemplation; nor was he ambitious of recognition, which indeed generally came to him in the form of abuse. He did not escape "the exquisite rancour of theological hatred," but it was his belief, and the conviction inspired his life, that—

"Neither riches, nor sensuous enjoyment, nor honours, can be a true good for man"; but on the contrary, "that the only thing which is able to fill the mind with ever-new satisfaction is the striving after knowledge, by means of which the mind is united with that which remains constant while all else changes."

"The God-intoxicated," was the name given to Spinoza long afterwards in Germany. He died (like St. Francis) at forty-five, worn out with the toil of thought. And it renews one's faith in the perspicacity of commonplace people to learn that his barber, sending in a bill after the death of the philosopher, alluded to his late customer as "Mr. Spinoza of blessed memory." It was left to a contemporary theologian to describe him as "an unclean and foul atheist."

Leibniz.—Spinoza had taken over from Descartes and Hobbes their mechanical and determinist conception of nature, though he gave to it, as we have seen, an interpretation of his own. His attitude was a blend of that rationalism and mysticism which were characteristic of so much seventeenth century thought. A far more complete reaction, however, displays itself in the system of a contemporary of Spinoza's—Gottfried Wilhelm Leibniz (1646–1716); who, when already

a youth, had become an enthusiastic devotee of the new science; the study of Kepler, Galileo and Descartes caused him to feel as though "transported into a different world." Though a German by birth, Leibniz lived continuously in France, and wrote habitually in the language of that country.

Contrast to Spinoza.—Spinoza and Leibniz stand as examples of two distinct methods of eluding the despotism of mechanics—methods which will meet us again in the course of our survey. Spinoza accepts the mechanical view as being inevitable and even desirable, but subjects it to a spiritual interpretation—he regards it as the way in which the *Natura naturans* works.[1] Leibniz, on the other hand, viewed existence from an entirely different standpoint. He was bold enough to reject the mechanical view altogether; or rather he preferred to regard it as a convenient abstraction, or a useful formula, which might reflect certain aspects of reality, but could not do justice to its concrete richness and complexity.

A Philosophy of Individuals.—Leibniz's criticism of Descartes and the mechanical school proceeded along different lines from that of Spinoza, who, as we have seen, accepted the mechanical view as the basis of his speculation.

An axiom of that view was (as we know) the conservation of motion. For this conservation of *motion*, Leibniz substitutes the conservation of *force* as being logically the more fundamental concept. True reality, according to him, is not *motion* itself, but the *force which is its cause.* Force and existence became for

[1] Here we may note, by way of an anticipation, a truth that Kant afterwards was the first to grasp clearly: that it is only when the mechanism of phenomena is proved, that religion can be purged of materialism

him identical terms; to work and to exist were the same. That force is the true reality, Leibniz expressed in the language of his time by saying, "Force is substance, and all substance is force"—a proposition which would not be repudiated by modern science—and upon this statement his philosophy is built.

But it was not "force in general" or some "universal force" that was regarded by him as the final reality: Leibniz was not a forerunner of Herbert Spencer. Reality for him consisted in *individual centres of force*—a multitude of individual and independent beings, each with its own idiosyncrasy, and following its own lines. Existence was, in fact, for him, *individual*. It was the *individual* centres of force—not *general* principles, universal substances, laws or forces—that make up reality.

Doctrine of Monads.—This view of reality was formulated by Leibniz in his famous doctrine of "monads." "Monad" was the technical name applied by him to those absolute individuals which he regarded as constituting true reality. The word, meaning "unity," was simple and appropriate. And he declared that the "monad," to be rightly understood, must be regarded as analogous to our own souls. This principle of analogy was described by Leibniz as *mon grand principe des choses naturelles*. Thus reality was interpreted by him not in physical but in psychical terms, or if the expression be preferred, in terms of personality.[1]

Of these "monads" there exist, according to this view, infinitely many degrees. In fact all existence

[1] Cf. letter to Arnauld, quoted by Höffding, I, p. 347: "The substantial unity presupposes a complete, indivisible being. Nothing of this kind is to be found in figure or motion . . . but only in a soul or a substantial form similar to that which we call an 'I.'"

differs only in degree from our own. Even between mind and matter there is only a quantitative and not a qualitative gulf. For there are sleeping, dreaming, and more or less waking monads; and matter is a form of unconscious mind; the monads which compose material objects being "minds without memory," "momentary minds."

Let Leibniz speak for himself:—

"Each portion of matter is not only infinitely divisible, but is also actually subdivided without end. . . . Whence it appears that in the smallest particle of matter there is a world of creatures, living beings, animals, entelechies, souls. Each portion of matter may be conceived as like a garden full of plants, or like a pond full of fishes. . . . Thus there is nothing fallow, nothing sterile, nothing dead in the universe. . . ."[1]

Leibniz may indeed be said to have been the first to outline a theory of "panpsychism" (as it is termed), according to which there is nothing that is not, in its degree, alive. As we shall have occasion to observe, Leibniz was here (as elsewhere) a forerunner of much recent philosophy.

The significance of the Spinozist and Leibnizian systems of thought, though regarding existence from such diverse standpoints, was, for practical purposes the same. Both alike led out, though by different paths, beyond the mechanical theory of the universe. They, indeed, represent two types of thought which attempt to reach the same end by different methods. Their counterparts will meet us again as this history proceeds.

Pascal.—But before passing out from the seventeenth century, one thinker ought to detain us; for

[1] The *Monadology* (quoted by Pattison, *Idea of God*, p. 180).

from more than one point of view he was a notable personality, and of first-rate importance in the history of religious, as distinct from purely philosophical thought. He was indeed one of those figures who are distinguished among distinguished men of all times.

Blaise Pascal was born in 1623, and was a boy of precocious mathematical ability. By the age of twelve he is said to have worked out independently most of the first and second books of Euclid; at sixteen he wrote a treatise on Conics which attracted the attention of Descartes; at nineteen he completed a calculating machine—a device that had never been dreamt of before. At this point it is not surprising to learn that his health broke down.

Pascal is not a systematic philosopher; but his acute intellect was united to an inner restlessness of soul. Neither science nor philosophy could bring him peace, for his needs were far deeper than any merely rational systematisation of ideas could satisfy. Some have said of him that he was fundamentally a sceptic, but one for whom religious faith was essential; certainly in him were united an acute critical faculty and an intense religious experience. Perhaps the two are not so incompatible after all.

THE "PENSÉES."—Pascal is chiefly famous for two works, the *Lettres Provinciales* and the *Pensées*. The former is controversial literature, but yet a classic of the French language: in sum, it is an attack on the Jesuits; but it need not here detain us, for with theology, as such, we are not concerned, and still less with ecclesiastical systems. The *Pensées* is a collection of fragments, the material for an Apology for Christianity which was never written. The auto-

graph MS. preserved in the *Bibliothèque Nationale* at Paris " is made up of scraps of paper of all shapes and sizes, written often on both sides . . . and dealing with all sorts of subjects." One is reminded of the mythical scraps of manuscript from which the genius of Carlyle distilled the philosophy of the sagacious Teufelsdröch.

But it is in these detached fragments that Pascal has expressed his spiritual and intellectual struggles; they contain his philosophy of life. And, however unsystematic in arrangement, they do reveal a fairly definite temper and attitude of mind.

Pascal's Philosophy.—In the first place, the *Thoughts* voice a reaction against the " Cartesian intellectualism " which was then the prevalent tendency in scientific and philosophical circles. " The last attainment of reason is to recognise that there is an infinity of things beyond it " might perhaps have been published by Pascal's predecessors. " To laugh at philosophy is to be a true philosopher " would have seemed like blasphemy or nonsense to most of his contemporaries, but it was neither of these.

Behind sayings of this description lay the strong conviction that mere logic was incapable of probing the depths of existence. " The heart has its reasons of which reason knows nothing," is sound psychology, and not scepticism or obscurantism. Of course it all depends what one means by " reason." Too many of Pascal's contemporaries applied the word to a more or less shallow rationalism utterly opposed to a spiritual view of things, whereas reason properly understood is " the logic of the whole personality."[1]

That Pascal was no mere narrow anti-rational

[1] Inge, *Christian Mysticism*, p. 19.

obscurantist is evident, not only from his own extraordinary insight, but from his continual reiteration of his idea that the essential dignity of man lies in his thought:

"All bodies, the firmament, the stars, the earth and its kingdoms, are not worth the smallest mind, for a mind knows them, and itself, and bodies know nothing."

Here lies the true greatness of man. In respect of material bulk he is nothing, but his thought cannot be measured. "Man is only a reed, the feeblest reed in nature, *but he is a thinking reed.*" The saying has become famous, and the words that follow are hardly less so; they remove the overpowering and crushing incubus of man's illimitable material environment, which, since Copernicus, had weighed upon thinkers like a nightmare:

"Were the universe to crush him, man would still be more noble than that which slays him, because he knows that he dies, and the advantage that the universe has over him: of this the universe knows nothing. Thus all man's dignity lies in his thought."[1]

Pascal's Pessimism.—It has been said that an unbridgeable gulf lies between those who believe and those who disbelieve in mankind. It is to the latter category that Pascal belongs. His faith in the dignity of man is paradoxically associated with a realisation of his weakness and imbecility:

"What a chimera, then, is man! What an oddity, what a monster, what a chaos, what a subject of contradiction, what a prodigy! Judge of all things, senseless earth-worm; depository of truth, cloaca of

[1] Cf. "With space the universe encloses me and engulfs me like an atom, but with thought I enclose the universe." A great saying.

uncertainty and error; the glory and the refuse of the universe."

"We desire truth, and find in ourselves only uncertainty; we seek happiness, and find only misery and death. We are unable not to wish for truth and happiness, and incapable either of certainty or felicity."

In fact, we may say that Pascal was the first, in an age of exaggerated reverence for logic (the *damnosa hereditas* of the Scholastic theologians) to understand that the best arguments for religion are the facts of human experience, and the conditions of human life.

"In vain, O men, do ye seek within yourselves the cure for your troubles! All your knowledge can only teach you that it is not within yourselves that ye find the true or good!" Here we have the language of religious experience. The result of Augustine's meditation upon life was the same: *Inquietum cor nostrum dum requiescat in te.* It is a tongue that the "psychic man" can never understand; it seems to him affectation; such language is foreign to the easy optimism of an age of confidence. Indeed Pascal, though so intensely modern, is a stranger, and his words often enigmas to our time.

Vanitas vanitatum is thus the verdict that he passes upon human experience. "The last act is tragic, however fine the comedy of all the rest."

Significance of Pascal.—It is not as a systematic thinker that Pascal is of importance to the historian of thought. He typifies that more or less inarticulate and unreasoned revolt which the arrogance and optimism of a new science or a new philosophy arouse against themselves. He voices the eternal protest that it is not by bread alone that men live. As is

generally the case with such protests, the pessimism of Pascal was no doubt exaggerated; but exaggeration is necessary if minds are to be impressed; and those who feel strongly see only one side of a question.

RESULTS.—Thus in the three figures that have passed before us, we see a threefold protest against that exclusion of the spiritual from the human view of life. Spinoza, the pantheist, sees God everywhere;[1] Leibniz finds in every recess of nature the principle of personality; Pascal finds the only cure for human frailty and misery in religion.

[1] Novalis called him "the God-intoxicated": a bold phrase.

CHAPTER V

RISE OF AN ANTI-RELIGIOUS SCIENCE

ATMOSPHERIC CONDITIONS.—As we have seen, a mechanical view of the universe was not felt by thinkers like Descartes or Newton, or even Hobbes, to involve any consequences that were necessarily hostile to religion. The new science sometimes might be anti-theological, because the current theology still seemed too much infected with Scholasticism, but it was not, in the hands of its most notable exponents, anti-religious. Science had no quarrel with religion as such, nor even with a rational type of theology.

Of course the new views aroused many suspicions, and did not escape criticism at the hands of Church authorities, both Protestant and Catholic. And (as we have seen) some early scientists paid very dearly for their allegiance to the spirit of scientific enquiry; but as time went on, actual persecution became impossible, morally and practically. But theologians were never, during the seventeenth century at least, quite reconciled to a science and a philosophy which seemed to them to be leading men towards areas quite uninhabitable for religion. But in spite of suspicions on either side, and the prevalence of some measure of intolerance, it cannot be said that relations between the scientists or philosophers and the theologians were very seriously strained until well on in the eighteenth century.

Anti-Religious Propaganda.—That this comparatively pacific state of affairs came to an end was the fault, primarily, at least, neither of the theologians nor of the scientists. A different atmosphere gradually began to envelop and to embitter the controversy. Orthodox religion, especially in Catholic countries, came to be associated with political reaction, and the most envenomed onslaughts began to be made upon what seemed to be the chief stronghold of a discredited regime. Especially was this the case in France, where corrupt political conditions were aggravated by the intense social misery which they had created.

Thus France became the cradle of the phenomenon known as anti-clericalism, which is the product not so much of disbelief in a creed as of hatred of a system ; it was the correlative of a Church in which religion was extinct, for genuine Catholicism had been rooted out of France early in the eighteenth century, just as Protestantism had been drowned in blood a century before.[1]

Science Popularised.—In two respects France, during the second half of the eighteenth century, was far in advance of other countries. No other literature of that age can be compared with the French for the skill and charm with which scientific views were expressed. There was no lack of first-rate propagandists.

[1] We refer, of course, to the promulgation of the Bull *Unigenitus*, procured from Pope Clement XI by the Jesuits ; when their opponents, the Jansenists " of all professions and classes, were subjected to imprisonment, confiscation, and every species of oppression " (Jervis, *Student's History of France*, p. 415).

The manœuvre is characterised by another historian as a " struggle of narrow-minded fanaticism, allied to absolutely unscrupulous political ambition, against all the learning and virtue which the French clergy still possessed " (Chamberlain, *Foundations of the Nineteenth Century*, Vol. II, p. 379).

And not only in the popularisation, but in the systematic teaching of science, France for a long period led the way.[1] Whereas the history of English or German literature of the eighteenth century could be written almost without reference to science, it is with scientific problems that the names of some of the most brilliant French *littérateurs* are associated. And whereas in England, scientific men worked (in spite of the existence of the Royal Society) more or less in isolation, in France the savants have always been a brotherhood.[2]

VOLTAIRE.—One of the most notorious names associated with the type of propaganda referred to is that of Voltaire (1694–1778). Voltaire's polemic cannot be described as anti-religious, for he himself was a theist. It was, rather, political in character. The object of his attack was the Catholic Church as existing in France in his day, which he regarded as the chief surviving obstacle to human progress. *Écrasez l'infâme* was his motto; and if this seems a trifle fanatical, let us not forget, as an acute critic has observed, "that what Catholicism was accomplishing in France in the first half of the eighteenth century was not anything less momentous than the slow strangling of French civilisation."[3]

Voltaire was an industrious and prolific writer (his works are numbered by scores), but he was also a

[1] Even before the age of the Revolution, Paris possessed many great schools. The *Collège de France* was founded in 1530; there was the *College et École de Chirurgie*, the *Jardin des Plantes*, the *École royale des Mines*, etc. (cf. Merz, *History of European Thought*, Vol. I, p. 107).

[2] Merz says of Newton: "In his own country that fruitful co-operation which can only be secured by an academic organisation and by endowment of research was wanting" (I, p. 99). As late as 1740 the whole revenue of the Royal Society was only *£232 per annum*.

[3] Morley, *Voltaire*, p. 41.

master of French prose, and he was universally read. From the point of view of the history of European thought his importance lies in his popularisation in France of the Newtonian physics.[1] *Newtonisme* was a word coined by him, and became associated with a mechanical view of nature. He also conducted a vigorous polemic against certain religious notions, then current, but now out-of-date, and which need not here detain us. Voltaire was an anti-clerical, but he was not hostile to religion ; he was chiefly regarded as an exponent of English (i.e. progressive) ideas.

La Mettrie.—An advance in the materialistic direction was taken, however, by La Mettrie (1709–1751), who approached the problem from the side of physiology (he was a physician by profession). His two important contributions were *Histoire naturelle de l'âme* (1745), and *L'Homme Machine* (1748). The titles are sufficient to indicate the scope of these works. That of the latter points back to Descartes, who had applied the mechanical theory to animals only, and not to man. La Mettrie extended his application to include man. The implications of this theory did not escape La Mettrie's contemporaries.

Diderot and His Encyclopædia.—A definite period in the history of thought is certainly marked by the successful attempt on the part of a group of progressive thinkers, to extend the circle open to scientific ideas by the publication of an Encyclopædia which should contain all the latest knowledge and speculation. The credit for this notable performance was due to Diderot, who in spite of immense difficulties, which were aggravated by the ecclesiastical authorities and the supporters of reaction in general,

[1] He published his *Élémens de la Philosophie de Newton* in 1738.

carried the work through to a triumphant conclusion. The first volume appeared in 1751. The work was composed with an eye to current prejudices; the language was guarded, but the anti-clerical tendency of the whole was by no means obscure. Diderot, however, did not obtrude in the Encyclopædia the definitely anti-religious opinions which he had developed and which are revealed in his correspondence.

Holbach.—A disciple of the Encyclopædist—Holbach, a young German settled in Paris—was bolder than his master, and published, under the name of a savant who had recently died, a book which became widely notorious, and has been called the Bible of materialism—the *Système de la Nature* (1770). Like Voltaire's *Élémens*, and La Mettrie's *L'Homme Machine*, it was published in Holland. "The book is materialism reduced to a system. It contains no really new thoughts. Its significance lies in the energy and indignation with which every spiritualistic and dualistic view was run to earth on account of its injuriousness both in practice and in theory,"[1] is the estimate of a distinguished and impartial writer.

Rumour gave the credit of its authorship to Diderot, who was so disturbed by the compliment as hastily to leave Paris for the frontier. His admiration of it is, however, recorded. After proclaiming his disgust at the contemporary fashion of "mixing up incredulity and superstition," he observes that no such fault is to be found in the *System of Nature*. "The author is not an atheist in one page, and a deist in another. His philosophy is all of a piece."

Certainly to those with an appetite for negative dogmatism the work left nothing to be desired. The

[1] Höffding, Vol. I, p. 481.

following passage indicates the attitude and method of the author, who, in the matter of style, did not fall short of the French tradition:

"If we go back to the beginning, we shall always find that ignorance and fear have created gods; fancy, enthusiasm or deceit has adorned or disfigured them; weakness worships them; credulity preserves them in life; custom regards them, and tyranny supports them in order to make the blindness of men serve its own ends."

The philosophy of religion which inspired these sentences may appear to us sufficiently crude. And indeed an impartial reader will have to confess that much of this eighteenth century polemic against religion, however well-intentioned, is singularly wide of the mark. It is all characterised by an imperfect knowledge of the psychological foundations of religion, and quite devoid of what is now termed the "historic sense." The faults of Voltaire and Holbach, however, were those of their age, which was often short-sighted in its recognition of facts, and superficial in its reasoning from them. Even Dr. Johnson, who found this section of contemporary French literature so distasteful, never laid his finger upon its real weakness; the fundamental fallacies upon which it rested escaped him. He, like Voltaire and the rest, was a child of the age.

Propaganda not Science.—It is very doubtful whether the genuine scientists, who devoted themselves not to propaganda but to research, could have been ready to sanction the uses to which their own discoveries were put. From the exhaustive references of Lange in his *History of Materialism* (Engl. Trans., Vol. II, pp. 49–123), it is evident that "the extreme

views of La Mettrie, Diderot, and Holbach cannot be fathered on any of the great scientists or philosophers, but were an attempt to supply scientific principles to the solution of philosophical, ethical, or religious questions, frequently for practical and political purposes."[1]

There are certainly risks attached to the popularisation of the results of scientific research. Theories have to be presented with an appearance of finality which does not legitimately belong to them, and sometimes in a somewhat startling aspect, otherwise the reader is left cold, for it is excitement rather than genuine information that attracts the majority. As a judicious writer has observed :

" No ideas lend themselves to such easy, but likewise to such shallow generalisations as those of science. Once let out of the hand which uses them in the strict and cautious manner by which alone they lead to valuable results, they are apt to work mischief. Because the tool is so sharp, the object to which it is applied seems to be so easily handled. The correct use of scientific ideas is only learnt by patient training, and should be governed by the not easily acquired habit of self-restraint."[2]

Scientific Progress.—Alongside of this rigorous propaganda, which prepared the way for the upheaval of 1789, genuine scientific progress was being made, especially in the regions of Astronomy, Botany and Chemistry. The ideas of Newton were taken up and elaborated by means of more efficient mathematical processes—especially the theory of infinitesimals—by the distinguished astronomer, Laplace, in his *Système du Monde* (1796), and in the successive

[1] See note in Merz, Vol. I, p. 145. [2] Merz, Vol. I, p. 143.

volumes of his *Méchanique Céleste* (1799–1825), which has been called a new *Principia*.

Important advances in chemistry are associated with the name of Lavoisier (1743–1794), who introduced into that science a principle which has become axiomatic, and which to-day remains the foundation of all work in the laboratory. To Lavoisier belongs the merit of introducing what is known as the " quantitative method " into chemistry, and thus establishing that science upon the exact—that is to say mathematical—basis, where it now rests and putting exact research in the place of vague reasoning. His principle was that *in all chemical combinations and reactions, the total weight of the various ingredients remains unchanged ;* there is (in spite of appearances) neither loss nor gain of actual matter. " The quantity of matter is the same at the end as at the beginning of every operation." It was Lavoisier who finally established the correct theory of combustion ; that it consisted in the combination of a special element called oxygen, with other bodies or elements.

The Atomic Theory.—Lavoisier had opened a door to researches which naturally led the way to the establishment of the atomic theory of matter on an experimental, and not merely a theoretical basis. That theory is indeed nothing more than the elaboration of Lavoisier's own principle. John Dalton (1766–1844), a Manchester quaker, published in 1810 his *New System of Chemical Philosophy*, where highly important conclusions are drawn both from Lavoisier's facts and from experimental results of other chemists. Of these, Dalton gave an account and an explanation which has ever since been the soul of all chemical reasoning. This explanation is known as his Atomic theory.

The two facts of which Dalton's theory is an explanation are as follows. *First* (Lavoisier's fact), that the total weight of substances remains always the same, be they combined in ever so many different ways. *Second*, that all substances, be they in large or in small quantities, combine with each other, or separate from each other, in definite and fixed proportions. The theory of Dalton was that these combinations take place between independent particles of matter, which are indestructible and indivisible. These " atoms " of the various elements have definite weights which are responsible for the proportion in which they are found to combine. These facts of proportion in combination, or " chemical affinity," could not be accounted for by the theory which regards matter as " continuous," but only by the opposite theory that it is " discrete " (i.e. divided up into particles).

Philosophical Corollaries.—These strictly scientific theories associated with the name of Laplace, Lavoisier, and Dalton tended to strengthen in the popular estimation, the philosophical conclusions of writers like Holbach. The scientists themselves remained " agnostic " with regard to questions that lay outside their scope: they maintained here the correct attitude for scientific research. The question put by Napoleon to Laplace, why he had not introduced the name of God into the *Méchanique Céleste*, was out of place, and deserved the crushing reply it received. Scientific research is not concerned with questions of philosophy.

Still, it did not escape popular attention that the old pillar of a mechanistic view of the universe now seemed to be reinforced by another. The theory of *the conservation of energy* was now supplemented by

that of the *indestructibility of matter* (Lavoisier). And to crown all, the old atomic theory, which Lucretius had made the foundation of his dogmatic materialism, was now re-established on an experimental basis.

So far as physical science was concerned, the situation seemed menacing to a religious view of life. Men felt that they inhabited a world of indestructible matter, moved by a certain measure of force, unchangeable and fixed. The prison of determinism and matter was closing around them.

CHAPTER VI

RISE OF GERMAN IDEALISM

AN UNSTEMMED TIDE.—In spite of those important reactions of thought which we have associated with the name of Spinoza, Leibniz, and Pascal, the mechanical view had not ceased, as the last chapter has shown us, to extend itself during the eighteenth century, when it became highly fashionable in progressive circles.

COMMON-SENSE PHILOSOPHY.—The strength of this mechanical view lies in the fact that it stands on the shoulders of a natural science which itself has its feet firmly planted on the irrefragible rock of sense-experience. The mechanical view thus rests, in the last resort, upon the belief (which is held everywhere with confidence by plain men) that sense-experience is a sound foundation for knowledge.

The importance of this belief had been recognised by the English philosopher, Locke (1632–1704), who in his *Essay concerning Human Understanding* (1690), lays it down that all human knowledge is based, ultimately, upon sense-experience. This highly important work had an immense influence, and, under Locke's tutelage, many thinkers regarded with suspicion any knowledge which might seem not to be derivable, in one way or another, from that source.

As the strength of Samson lay in his unshorn hair,

so the strength of the mechanical theory lay, and still lies, in the acceptance of Locke's theory of human knowledge, i.e. that it is all derived from the senses. And the Delilah who can shear away Locke's conclusions, leaves Samson helpless ; mechanical materialism becomes a discredited theory. Hence the truth of the saying that the problem of knowledge is the preliminary question for philosophy.

Weakness of Speculative Philosophy.—Spinoza and Leibniz may be said to have dispensed with this foundation. Taking the scientific knowledge of their time for granted, they drew certain conclusions therefrom ; but their results, however imposing, were felt to be the result rather of speculation than of reason. Such was the more or less unexpressed estimate of their work. It was undervalued, for both Spinoza and Leibniz were thinkers of the first calibre ; and yet there was some justice in the charge. By the end of the eighteenth century the days of merely speculative philosophy were past.

The Critical Philosophy.—The time was ripe for a new metaphysic—for a fresh step forward in philosophic method. That step was taken by the celebrated Immanuel Kant, who is the originator of what is known, in the history of thought, as the Critical Philosophy.

The word *critical* signifies a particular method of approaching the problem of existence, a method which must be contrasted with that of the *speculative* philosophy, of which Spinoza and Leibniz are examples.

The critical philosophy, before attempting (as Spinoza had done) to tackle the problem of *existence*, first attacked the problem of *knowledge*. Before asking *What is the truth?* it put the preliminary question,

What are the means at man's disposal for reaching the truth? It prefaced all philosophical enquiry by an examination into the nature and scope of human thought. Such was the preparatory investigation which was to place metaphysics upon a secure and scientific foundation. For the new philosophy, the gateway to all sound knowledge is the reflection of the human mind upon itself. "Know thyself," is its advice to the inquiring spirit of man. Here, if anywhere, is to be found the philosopher's stone.

Immanuel Kant.—The celebrated Immanuel Kant was born at Königsberg in 1724, and died in his native town in 1804. Between those dates he lived the industrious and uneventful life of a university professor. The Seven Years' War and the French Revolution left him undisturbed, though not unmoved. He was a man of quiet, regular habits, and his fellow-townsmen would set their clocks by his daily promenade.[1] But the adventurous originality of his thought serves as a contrast to this peaceful picture.

Kant, indeed, laid the foundations of philosophy afresh. With characteristic insight, he went to the very root problem of all, and challenged human thought itself. Before we can know anything, we must first of all demand the credentials of the instrument by which knowledge is gained. Before asking, *What* do I know? the preliminary question should be, *How* do I know? Otherwise we cannot say whether we are in a position to give any answer to those ultimate problems, the answers to which constitute philosophy.

[1] The receipt and perusal of Rousseau's *Emile*, are said to have interrupted the walk on one occasion, to the great astonishment of the Königsbergers.

It is far from easy to present Kant's criticism of knowledge at once simply and accurately. This philosopher has a not undeserved reputation for obscurity, and had he written in any other language than German, he would perhaps have found no readers.

THE PROBLEM OF KNOWLEDGE.—It had already been realised by the predecessors of Kant that what is called "sense-experience" is a less simple process than it seems, and that our senses cannot be said to reveal to us any object as it actually *is*. John Locke himself was not the first to point out that the so-called "secondary qualities" of any material object (i.e. colour, taste, etc.) are produced just as much by the person who perceives, as by the object which is perceived. Galileo, Descartes, and Hobbes, besides others, had been aware of this fact, which indeed becomes evident to the most superficial analysis of sense-experience.

The "primary qualities," i.e. density, extension, etc., continued to be regarded as subsisting *in* the objects themselves, and independently of any perceiving consciousness. But even this view did not prove permanent, and it was the episcopal philosopher, George Berkeley (1685–1753) who demonstrated in his *New Theory of Vision* that not even *these* qualities could rightly be regarded as subsisting independently.

Thus it had already been realised, long before Kant wrote his *Critique of Pure Reason* (published, 1781), that our senses are far from revealing to us things as they *are;* it is only the *appearances* of things and not the *things themselves* that the senses present to us. Indeed, as is well known, the Scotch philosopher David Hume (1711–1776), who was a master in the art of raising problems, extended this line of criticism

until it reached to pure scepticism. He put the question, If all our knowledge is derived from sense-experience, and *if* sense-experience only supplies us with appearance and not reality, what degree of trustworthiness can there be in human knowledge? And he was not afraid to give the logical answer—None. Hume may thus be said to have brought things to an impasse. As a matter of fact, what he had done was to refute Locke's theory of knowledge (i.e. that it is derived entirely from sense-experience) by means of a *reductio ad absurdum*.

THE KANTIAN CRITICISM.—Kant says that it was Hume who " awoke him from his dogmatic slumbers." By this he meant that Hume made him realise that it was no use indulging in philosophic speculation generally, or listening to the speculations of others, until " the Problem of Knowledge " was satisfactorily solved. To this problem Kant applied himself. And recognising Locke to be the *fons et origo malorum*, he subjected his theory of human knowledge to a close analysis, and exposed it as being fallacious.

Far from sense-experience being responsible for all our knowledge, Kant proved that important elements of knowledge are quite independent of sense-experience; especially was this so in the case of certain mathematical propositions. (Hence the question, How is pure mathematics possible? was put by Kant at the beginning of his philosophy.)

But it is neither necessary nor desirable to enter into the arguments by means of which Kant proved his thesis, which was that the human mind contains in itself certain principles of knowledge (e.g. the idea of cause and effect, the ideas of mathematics, and so on) which it does not owe to sense-experience.

KANT'S COPERNICAN HYPOTHESIS.—Kant called these principles of knowledge, *forms of thought* or *categories*. The name, perhaps, is irrelevant to our purpose; all that we need to understand is that Kant turned the tables upon Locke. Locke said that the mind was a *tabula rasa* which passively received impressions from outside. Kant said that the mind is nothing of the kind; it is not passive, but active; it does not "receive" whatever is offered, it "selects" what it wants; and *it imposes its own "forms of thought" upon the outside world.*

Photography had not been invented at the time of this controversy, but Kant might have said: The mind is not a photographic plate receiving impressions from without, it rather resembles the lens which impressions must pass through, and be transformed by, before they can create a picture.

Kant had, in fact, by this theory, instituted a revolution. His new dogma was: *The mind is the mould into which all our knowledge must be cast; and the constitution of our mind predetermines the shape that our knowledge takes.*

Thus Kant had discovered that not only sensuous perception, but rational understanding also, has its forms and presuppositions. Just as we become aware of objects only by means of senses which perhaps hide or distort as much as they reveal; so also our rational knowledge is conditioned by the nature of our understanding, which dictates to reality the "forms" under which it can be understood and known.

MECHANISM UNDERMINED.—How did this affect the mechanical theory? The connection is obvious Mechanism is nothing but one of the forms of thought that the mind imposes on phenomena. Just as

Copernicus had discovered that it is due to our position on the earth that the heavenly bodies *appear* to move round us, so Kant had discovered that it is due to the nature of our senses and understanding that we perceive things in space and time, and understand them as being mechanically determined. The space and time, and the mechanical determinism are not in the things, *but in our minds*. The fact is that we can only grasp things under these forms. Space, time, mechanical causation are forms and laws, *not* of nature, *but of the human intellect*, which is so constituted as to see things in this way.

Thus those axioms of science and of mathematics which lie at the base of all exact knowledge, and which had hitherto been regarded as *objective*, i.e. as inherent in the nature of things, were shewn by Kant to be, as a matter of fact, *subjective*, that is (in Kant's own phrase) "they express the conditions under which alone we are able to apprehend or understand the object." Thus all knowledge is conditioned by our nature, by the framework, so to speak, not only of our senses but of our minds.

In this way the mechanical view was outflanked; that view certainly seems to us inevitable and certain, but this is due to the constitution of our minds; the world seems to us to be determined, just as it seems blue to a person wearing blue spectacles. But there is no sufficient reason for supposing that it *is* either determined or blue. The law of mechanical causation is an axiom, but it is a subjective axiom.

Appearance and Reality.—This may not seem much of an advance on Hume's position. Human knowledge still seems precarious, if we assume the mind to be a kind of dictator which imposes its own

laws upon nature. And Kant indeed frankly admitted that neither our senses nor our reason were able to reveal to us things as they *are*, but only things as they *seem*; we grasp *appearance*, not *reality*, and (to use Kant's phraseology) *phenomena* not *noumena*. Thus Kant cut away the ground from under all rationalistic *dogmatism*; he shewed its presumptuous futility.

THE PATHWAY TO REALITY.—Kant, however, did not remain satisfied with the negative results of his critical philosophy, valuable as these were. Reality, it is true, lies out of range of the human reason, but it is not entirely inaccessible to us, and scepticism about the ultimate nature of things is not the necessary corollary of Kant's, as it was of Hume's, philosophy.

Kant drew a distinction between the "Theoretical Reason," which his *Critique of Pure Reason* had dealt with, and the "Practical Reason," which he discusses in his *Critique of Practical Reason* (1788).

THE "PRACTICAL REASON."—By the "practical reason" Kant meant the moral consciousness, and the law of the "practical reason" is the moral law, the fulfilment of which constitutes duty. This law springs neither from outside authority nor from experience; it is autonomous. And it is upon the existence of this autonomous moral consciousness that Kant plants his foothold in his endeavour to find a refuge from the philosophic agnosticism to which his analysis of the "theoretical reason" had led; and upon this rock he founded his belief in "God, Freedom, and Immortality."

By means of his "practical reason," man gets into touch with that real world, which his "theoretical reason" is unable to reach. In fact, the "practical reason" itself (or moral consciousness) is an element

in man's nature which belongs to the *real*, as opposed to the *phenomenal* world. For man himself is a citizen of both worlds, and has (so to speak) a dual nature, a foot on either shore. He is an inhabitant both of the world of mechanical phenomena, and of the "timeless world of freedom," which lies altogether outside of all mechanical conceptions.

KANT AND RELIGION.—"Religion we must seek in ourselves, not outside ourselves," is a saying of Kant's that gives the clue to his general attitude.

It is only in that world which cannot be interpreted mechanically (i.e. the inner world of freedom of which we never cease to be conscious) that we may seek, or can hope to find the source of religion. It is not the spectacle of the mechanically determined world of nature, but the demands of the moral consciousness that create religion.

For instance, it is the gulf that yawns between the ideal commands of the moral law, and the actual possibilities (so poor and meagre) of fulfilling and satisfying them, that creates, in the view of Kant, the need of God and immortality. These alone can guarantee the realisation of the ideal claims of the moral consciousness.

RELIGIOUS FAITH.—Thus the "practical reason" leads on to convictions concerning what lies beyond the limits defined by the "theoretical reason." The nature of the demands of the moral consciousness give us an insight into the nature of the super-phenomenal (transcendental, noumenal) world. That world must be of such a kind as to sanction and guarantee our moral ideals; it must be friendly and not hostile or indifferent to those ideals which man cherishes, but which his "phenomenal" experience seems to

contradict. Thus we see the truth of the saying that "The universe as a moral system is the last word of the Kantian philosophy."[1]

KANT'S INFLUENCE.—Kant was one of those thinkers who are responsible for turning the stream of thought into fresh channels. Through his researches into the nature of human knowledge, he discovered the conditions upon which it rests, and defined the limits beyond which it cannot pass. Thus, once for all, he put an end to dogmatism.

And to Kant also belongs the credit of having established the reality and validity of *inner* experience. The rock upon which his philosophy is built is no external fact or event—nothing in time or space—but the moral consciousness itself. And thus he restores, as the central interest of philosophy, the human individual, with all his experiences of need, of hope, and of insight. Personality is the principle of his philosophy. In this he is the true successor of the Reformation.

[1] Pringle Pattison, *Idea of God*, p. 26.

CHAPTER VII

THE ROMANTIC MOVEMENT

KANT AND AFTER.—With Kant the hey-day of rationalism terminated. He had put an end to the superficial psychology upon which it rested. For the rationalists, the life of the mind had consisted in *intellectual ideas;* but a more careful analysis indicated the presence of deeper-lying elements, which had hitherto been disregarded; there existed other important constituents besides the intellectual.

Kant's criticism of "pure reason" did much to discredit the old view; and by founding his philosophy upon the non-intellectual "moral consciousness," he heightened the prestige of feeling as against reason (in the narrow and limited sense of that word).

Thus Kant is not undeservedly called the father of a philosophy which succeeded him, and which was based upon the idea of the supremacy of feeling. But, at the same time, that title is more accurate as an estimate of another philosopher of rather different characteristics.

ROUSSEAU.—Jean Jacques Rousseau (1712-1778) was a man of unique genius whose figure occupies a prominent position not only in the annals of philosophy, but in social, political, and literary history. Even more than Voltaire was he responsible for sowing seeds of thought which bore fruit in the events of the

Revolution. And indeed, it is as the author of the notorious *Contrat Social* that he is most widely known.

ROUSSEAU'S "SENSIBILITY."—Rousseau was one of those philosophers whose character is the formative element which gives shape to their doctrines. His was a profoundly emotional temperament. He left behind him an invaluable document which lays bare all the psychological sources of his philosophy. The *Confessions* reveal to us a man highly sensitive and morbidly introspective, the slave of unreasoning impulses and passions. In the eyes of some short-sighted persons, these first-hand revelations will obscure or cast doubt upon the capacity and genius of the man, for they do little to prejudice opinion in his favour.

HE DEFIES THE ZEITGEIST.—Rousseau's profound originality lies in his having dared to dispute a dogma to which the prestige of an axiom then attached. He endeavoured to undermine the popular faith in scientific and philosophic culture. He went right back to Pascal, who, a century before, had raised the question as to the value of scientific knowledge for personal life, by proclaiming "The whole of philosophy is not worth an hour's study."

Rousseau's first philosophical work was occasioned by the offer of a prize on the part of a provincial academy for a thesis on the problem "Whether the restoration of the sciences and arts has contributed to purify manners?" "The question pierced Rousseau's soul like a flash of lightning." He felt (he tells us) that he saw a new world, and felt a new man; he saw no longer the world of culture, of science, of philosophy (which he felt to be as artificial as it was ineffective and vain), but the *real* world of personality, of living

feeling, of the inner life. It flashed upon him that it was the primitive and elementary feelings, the great and simple relations of life, which gave to existence its value. The rest was superficial and irrelevant.

ROUSSEAU AND RELIGION.—The intellectualist is ever the aristocrat.[1] Voltaire and the philosophers of the "enlightenment" spoke of the unenlightened multitude as *la canaille*. Its beliefs were superstitions. Rousseau knew that the things which men have in common are more vital than those in which they differ, and the primitive instincts of the race which we all share, are the most important part of our nature.

Among these primitive instincts, indomitable and irrepressible, is the instinct of religion. Thus Rousseau transferred the religious problem from the sphere of external observation and explanation of the world (to which the rationalists had promoted or degraded it), back to inner personal feeling. This marked an epoch in the philosophy of religion.

Moreover, Rousseau was able to write in a convincing fashion of religion, because (and here he differed from the intellectuals of his day) he had personal experience of what it meant. Hence wherever he alludes to religion his language has the ring of sincerity; it is always spontaneous, and sometimes it is passionate and poetic. His religious experience took the form of nature-mysticism, undogmatic (because non-intellectualist), but rich and deep:

"I can find no more worthy adoration of God than the silent admiration which the contemplation of His works begets in us, and which cannot be expressed by

[1] "Atheism is aristocratic," was the reply of Robespierre to one who mocked at his *Être Suprême*.

any prescribed acts. . . . In my room I pray seldomer and more coldly; but the sight of a beautiful landscape moves me, I cannot tell why. I once read of a certain bishop, who, when visiting in his diocese, encountered an old woman whose only prayers consisted in a sigh 'Oh!' The bishop said to her, 'Good mother, always pray like that; your prayer is worth more than ours.' My prayer is of that kind." [1]

Here we have one form of the religious spirit; for the mystic it is always true that "there is neither speech nor language." The mystic and the dogmatist stand at opposite poles, for dogmatism is always an attempt at definition even when that which is to be defined is indefinable; and here is to be found the common denominator between Kant and Rousseau. The former, by his analysis of reason, discredited dogmatism: the latter, by his apotheosis of feeling, contributed towards the same result.

Romanticism in Germany.—This strong movement of feeling, created on the one hand by Kant's *Critique*, and by the mysticism of Rousseau, took different forms in the two countries to which these two philosophers belonged. In France the new philosophy became the hot-bed of revolutionary ideas; whereas in Germany it found vent in a ferment of speculative systems, and in an outcrop of artistic production. It produced the philosophies of Fichte, Schelling, and Hegel, and the prose and poetry of Goethe and Schiller.

"It was the age of 'beautiful souls' and of 'noble hearts'; men believed themselves capable of the highest things; the immediate needs of the heart were set over against reason . . . under many successive forms Romanticism prevailed in literature, effecting

[1] *Confessions*, Book XII.

the re-birth of human fancy after the long labour of intellect." [1]

THE GOAL OF PHILOSOPHY.—Philosophic young Germany had set itself an ambitious programme. Kant, indeed, had cleared the ground for them, but his warnings that an eagle cannot soar beyond the atmosphere which supports it, were disregarded.

The philosophy of Kant himself was felt by the successors to be lacking in the *idea of totality*—in the conception of a whole. His division of existence into Appearance and Reality seemed to indicate a certain lack of finish in his philosophy; and they set themselves to explore the root of reality which to Kant seemed undiscoverable, but in which the sensuous and super-sensuous worlds are united, and from which they have emerged. This task became and remained the grand problem of philosophy for a whole generation of thinkers. All externality, isolation, and division were to disappear, all existence must be shown to be but degrees and phases of the one infinite reality. Spinoza's work had to be done again in the light of increased psychological knowledge.

FICHTE.—Of the thinkers who addressed themselves to this ambitious task, only two need be considered here; and these are chosen because they attacked the problem from different directions.

In the first place, Johann Gottlieb Fichte (1762-1814), who had been the first to lay down the programme of thought with explicitness, realised and admitted that the task which philosophy had set itself was beyond the powers of any logical train of thought. The "higher unity" of existence, the demonstration of which was the goal of philosophy, could be reached

[1] Höffding, Vol. II, p. 9.

only by a process of intellectual intuition,[1] it must be guessed or divined; for it presents itself (and this is a characteristically "Romanticist" idea) to the human mind in the immediacy of feeling, and not by discursive thought.

It was of the essence of Fichte's philosophy, as it had been of Spinoza's, that a point may be attained where the mind feels itself to be at one with the truly real, and only when this point is reached—i.e. *sub specie aeternitatis*, will it arrive at and retain the conviction of the universal order and unity of existence. From this standpoint, and from this alone, does it become possible to grasp "the meaning of those dualities and contrasts which we find around and in us, the differences of self and not-self, of mind and matter, of subject and object, of appearance and reality, of truth and semblance."

HEGEL.—It has been said, perhaps with justice, that "philosophy is the finding of bad reasons for what we believe upon instinct." The remark might seem, at least in the eyes of some, to be particularly applicable to the work of Georg Wilhelm Friedrich Hegel (1770-1831). Not because his arguments are bad, but because he attempted to establish by strict logic the conclusions which Fichte sought to reach by means of intuition, and which perhaps are only attainable by that method. Hegel attempted to climb, by a strict process of reasoning, to the position from which the Fichtean landscape might spread itself below as a

[1] Fichte's word is *Anschauung*, for which the English language possesses no exact equivalent. It "implies something akin, though perhaps superior to, seeing or perceiving by means of the senses," and it approaches less closely to "inspiration" than does the English word "intuition." The term acquired a meaning somewhat akin to the *amor intellectualis Dei* of Spinoza, which we have met before. (See note in Merz, III, p. 445.)

logical whole : he claimed to be a reasoner as well as a seer. And thereby he may be said to have furnished " the programme of thought for a certain class of intellects which will never die out."

Thus Hegel was something of a hybrid, and may be described as a rationalistic-romanticist. Nor are his arguments the easiest to understand. " The only thing that is certain," writes a commentator who stands at an opposite philosophical pole, " is that whatever you may say of his procedure, some one will accuse you of misunderstanding it. I make no claim to understanding it ; I treat it merely impressionistically." [1] And this is all we can do here.

Hegel's Method.—Hegel proceeds by means of what he calls the *Dialectical Method*. He understand, by " dialectic " (1) a property of all our *thoughts* in virtue of which, each particular thought necessarily passes over into another ; and also (2) a property of *things*, in virtue of which every particular thing necessarily belongs to, or is related to, all other things. A thing " by itself " is nothing.

Hence a similarity or parallelism between the *method of thought* and the *nature of things*. Logic is of the nature of things. The way in which thought reaches truth is also the way in which things exist. Hegel expressed this in his well-known saying " the real is the rational, and the rational is the real." Perhaps more poetically or obscurely the same proposition is expressed by declaring : " When we think existence, existence thinks in us," and " The pulse of existence itself beats in our thinking."

Hegel's logic may, in fact, be described as an attempt to conceive the movement of thought as being at the

[1] William James, *A Pluralistic Universe*, p. 92.

same time the law of the universe. Logic (to repeat what we said before) is of the nature of things : reality is rational, and what is rational is real.

Thus logic for Hegel did not mean (as it meant for Kant) the forms or laws of thought : it signified the very core of reality. For all that Kant knew, reality might or might not be rational: all he asserted was that the human mind rationalised reality (or parts of it). For Hegel, logic or reason was the living and moving spirit of the world. The essence of reality and the essence of thought were one. The absolute reality was spirit.[1]

HEGELIANISM.—Hegel's philosophy may be described as an attempt to reach the standpoint of religious mysticism by means of purely rational processes. It is the finding of rational grounds for supra-rational intuitions. The attempt is laudable, and, in the eyes of many, it was successful. And, as we shall see, Hegelianism had an important future, especially in England ; nor, as a system of thought, is it yet extinct. Its central conception is that which, in one shape or another, will never cease to appeal to mankind—that existence is, at bottom, spiritual in character—that spirit is the only ultimate reality.

That Hegelianism provides a rational basis for a spiritual religion is obvious enough ; nor is it necessary to indicate the possibilities of linking up the Christian doctrine of the Logos with a philosophy for which Reason was the very core and ground of existence. Hegel may indeed be said to have laid the foundation of Christian theology afresh ; or rather to have restored

[1] Here again a certain ambiguity surrounds the German word. *Geist* is inadequately translated by either " mind " or " spirit " : it comprises the meaning of both words (cf. Merz, III, p. 466).

what was best in the old theology, and given it the prestige of modernity.

Religion and Philosophy.—In fact, for Hegel as for all rationalists whose attitude is also religious, religion and philosophy were two forms of the same thing. Religion contains philosophic truths under the form of imagination: philosophy contains religious truth under the form of reason. The difference is one of form only, not of content. This had not been the view of Rousseau, nor is it the deepest view; and it was not the view of a thinker of the Romantic school who did more than any individual among his predecessors to bring the religious problem to the point where it now stands.

Schleiermacher.—While the sun of Romanticism was at its zenith, the spirit of Kant's critical philosophy was kept alive by a thinker of as deep spiritual and intellectual insight as Hegel himself.

Friedrich Ernst Daniel Schleiermacher (1768-1834) brought the religious problem down fom those altitudes to which Romanticist metaphysics had raised it, to what Kant had called "the fertile bathos of experience." He approached religion from the side of inner experience, the point of view of psychology. The profound insight of Kant had already shown that this was the direction on which future thought would travel, by tracing back the religious problem to a *personal need* more clearly and penetratingly than ever before—a need set up by the incongruity of the real and the ideal.

His View of Religious Ideas.—Just as Rousseau, owing to his own religious experience, was in a better position to attack the religious problem than the philosophers of the "enlightenment," so Schleier-

macher had the advantage of some Romanticists. As a boy, he had been put to school with the Moravians, and throughout his own life he never ceased to declare that the years spent among them had been of vital importance to the development of his views. In 1801 he writes :

" My way of thinking has indeed no other foundation than my own peculiar character, my inborn mysticism, my education as it has been determined from within."

And his own experience of religion established in him the conviction that the innermost life of men must be lived in feeling, and that this alone can bring man into immediate relation to the highest. His acceptance of Kant's criticism of reason led him to understand that intellectual concepts, in the religious sphere, (i.e. dogmas) must always be of secondary importance : *experience* comes first. And his profound originality lies just here, and it is just here that Schleiermacher stands out as the forerunner of the modern view. He it was who first made it evident that religious ideas derive their validity from that inner experience which they are an attempt to describe. If a dogma is an expression of an experience felt by man in his innermost life, it is a *valid* dogma, even if philosophic criticism hesitates to sanction it.[1]

What is Religion ?—The distance of this position from that of the eighteenth century intellectualism which regarded religion either as a form of philosophy

[1] This does not mean that what is not good enough for philosophy is good enough for religion. The idea behind Schleiermacher is that what philosophy cannot sanction, religious experience *can* sanction. And it has to be remembered that, as a follower of Kant, he assigned very definite limits to the powers of philosophy. He was not an Hegelian—Hegel's and Schleiermacher's views of the religious problem are quite incompatible—the one believed, the other did not believe, that reason could solve that problem.

or of superstition, is obvious. Schleiermacher attacks two intellectualist prejudices in particular: (1) That according to which religion is conceived of primarily as a doctrine (either revealed, or grounded on reason), and (2) That which regards religion as merely a means towards morality.

Religion, according to Schleiermacher, has an existence independent of (though, no doubt, associated with) philosophy, superstition, or morality. Its essence consists neither in speculation nor in action, but in a certain type of feeling, of inner experience. Schleiermacher characterised this particular type of feeling as *a feeling of dependence:* the immediate consciousness that everything finite exists in and through the infinite, everything temporal in and through the eternal.

That Schleiermacher should have described the specifically religious feeling in this particular way is comparatively irrelevant so far as our present purpose is concerned. The point of importance is that he was the first to recognise the *independence* of religion, to see in it a legitimate and natural form of human activity, which exists, not for the sake of knowledge or of morality, but for its own sake, and on its own account.

Here, though Hegel took a different view, Schleiermacher is one in spirit with the Romantic school; indeed, he may be said to have drawn the logical conclusions of Romanticism. The independence and originality of religion is the necessary consequence of a philosophy which set itself against the unbalanced intellectualism of the "enlightenment."

The permanent significance of Romanticism lies here: That it discredited once for all the notion that

there is only one road to reality—that of logic. It is not only philosophy, but religion and art that remove the veil which hides the supra-sensible world from us. And to close our eyes to the facts of religious experience, or to attempt to discredit them by the application of irrelevant terms such as " superstition," is not only to display ourselves as philistines, but also to forsake the highest traditions of science—veneration for experience, and the realms of fact.

CHAPTER VIII

MECHANISM AND LIFE

RECAPITULATORY.—We have already observed the mechanical theory, in the hands of Descartes, expanding itself to cover organisms and the phenomena of life, and in La Mettrie's *L'Homme Machine*, reducing even human beings to the status of automata. These theories were, however, known to be insecurely based upon somewhat hasty generalisations, for, in point of fact, the science of biology was as yet in its infancy ; the *data* for a complete vindication of the mechanical position were as yet wanting.

ADVANCE OF BIOLOGY.—Biological science, however, during the first half of the nineteenth century made considerable advances, and research continually kept bringing to light facts which seemed to substantiate the brilliant, if premature, hypothesis of Descartes. It will not be necessary for us to do more than take hasty note of certain important developments.

It was in 1828 that the German chemist Whöler (1800–1882) for the first time in biological history prepared an organic compound (urea) from inorganic materials—an achievement universally recognised to be of the utmost significance. As a distinguished historian of the science of chemistry puts it :

" This discovery destroyed the difference which was then considered to exist between organic and

inorganic bodies, viz. that the former could only be formed under the influence of vegetable or animal vital forces, whereas the latter could be artificially produced."[1]

Ten years later another German, Schleider (1804–1881) propounded the cellular theory of the structure and growth of plants, a theory which was soon extended to animal organisms by Schwann (1810–1882). The publication of this famous theory was described by a contemporary as "a burst of daylight"; it indeed illuminated what had hitherto been buried in mystery and mythology—the structure and method of growth of plants and animals. It seemed to render superfluous any form of the old conception of a "vital force" to explain the phenomena of growth, if it could now be assumed that the cells automatically absorbed outside material, increased in number by the division of individuals, and built up the organism by continual repetition of this process.

Schwann was also responsible for initiating a number of minute physiological investigations which led to a far more intimate knowledge of the action of nerves and muscles, and interpreted these in mechanical terms. "Investigations which were carried on with all the resources of modern physics regarding the phenomena of animal movements, gradually substituted for the miracles of the 'vital forces' a molecular mechanism, complicated, indeed, and likely to baffle our efforts for a long time to come, but intelligible, nevertheless, as a mechanism."[2]

Subsequent researches, notably of Helmholtz (1821–1895) and Meyer, lent strong support to this inter-

[1] Kopp, *Geschichte der Chemie*, Vol. I, p. 442 (quoted by Merz, Vol. I, p. 191).
[2] Merz, Vol. I, p. 218.

pretation. The conception of the conservation of energy (an important axiom of the mechanical theory) was successfully applied by them to the economy of organisms. The organism was found not to *create* energy, but only to contain remarkably efficient means of deriving it from materials absorbed as food. Thus animal warmth and the power of motion are originally "sunlight transformed in the organism of the plant," and afterwards appropriated by the animal. The power with which we move our limbs is as much the product of combustion as is the power of a steam engine, the only difference being that the organism is, of the two, the more efficient converter of energy.

The Mechanical Theory Substantiated.—Thus, whether biologists were considering the *structure* or the *behaviour* of organisms, they were arriving at the same conclusions. The structure was revealed as physical and chemical structure, and the behaviour as the resultant of familiar physical and chemical processes. Hence biology came to be regarded as a compartment of physics and chemistry, for life itself was nothing but a complex physical or chemical phenomenon. Life could thus be satisfactorily expressed in terms of matter and energy. The speculations of Descartes seemed to be established by experimental science.

The Final Obstacle.—The situation, already satisfactory to those whose hope it was to see the mechanical theory impregnably established, was marred, however, by one untoward circumstance. The phenomena of organic structure, growth, and behaviour having been reduced to order, and expressed in terms of physics and chemistry, certain important facts still resisted

explanation, and stood out as a last stronghold of the older view.

The Origin of Species.—The existence of definite forms of animal and vegetable life, whose infinite variety and complexity was continually being increased by research[1]—still remained a mystery. How did these innumerable species naturally and automatically come into being? was the question that must be satisfactorily answered before the mechanical view could be held to cover all the facts.

The direction in which to look for a reply had been indicated by a number of thinkers. The French naturalist Buffon, the philosopher Kant, and the poet Goethe—besides other thinkers—had already in the eighteenth century familiarised the idea that species are not immutable, but that, by some means or other, new forms of life are derived from pre-existing ones. The conception had gained a firm foothold in England, where it was hospitably entertained by Mr. Herbert Spencer, and where it formed the staple of a book which caused a good deal of controversy in its day, and which is not yet forgotten.[2]

Lamarck.—The evolutionary idea, however, though attractive to philosophers, and even to men of science, was insufficient as an explanation of the origin of species so long as the processes of transformation remained obscure. Naturalists could not accept an hypothesis for which there seemed to be such imperfect evidence. An ingenious French scientist, J. Baptiste

[1] According to one authority (Judd, in his *Coming of Evolution*) the number of known species of plants and animals must be placed at 600,000 (p. 10).

[2] *Vestiges of Creation*, published anonymously in 1844, passed through nine large editions by 1853. The author was Robert Chambers (1802–71), a geologist.

de Lamarck (1744–1829) had indeed, in 1809, propounded the theory—ever since known by his name—that the use or disuse of particular organs might, after a long series of generations, result in the formation of new species. (The ideas denoted by the words "environment," "adaptation," "acquired habits"—now so familiar—may be said to have been introduced by him). But the scientific prejudices of the time were against Lamarck's theories, and he had to lament their inhospitable reception. Indeed Lamarck's critics did not hesitate to exercise their powers of ridicule, or to make fun of the giraffe who derived his long neck from the attempts of his ancestors to browse on high trees. Darwin himself talks of "Lamarck's nonsense," and of his "veritable rubbish"—language, however, which he was subsequently able to retract.

The New Geology.—Perhaps the most stubborn obstacle which Lamarckian theories had to meet was the current prejudice as to the age (or youth) of the earth. Contemporary geologists were by no means prepared to grant Lamarck the illimitable periods of time which his transformation processes seemed to require. Consequently it is not surprising that the new theories, perhaps for the first time, received a measure of justice at the hands of one who himself became responsible for a revolution in the science of geology.

"I devoured Lamarck *en voyage*," writes Charles Lyell, describing a journey from Oxford in 1827. "His theories delighted me more than any novel I ever read, and much in the same way, for they address themselves to the imagination. . . . That the earth is quite as old as he supposes, has long been my creed."[1]

[1] *Life and Letters*, Vol. I, p. 168 (*vide* Judd, *Coming of Evolution*, p. 89).

In spite of the fascination of these theories, however, Lyell was not carried away by them, and it was not for some years that he estimated them at their true value. Meanwhile the new geology made its appearance with the publication of the three volumes of his own *Principles of Geology,* between 1829 and 1833. The significance of the book for biological speculation —for theories of the origin of species—lay in its thesis that the present condition of the earth is the product of geological processes incalculably long. Hitherto the " catastrophic theory " had been dominant—the notion that a series of immense catastrophic events (like the Deluge) had been responsible for the present condition of the earth's surface. For this Lyell substituted his " Evolutionary Theory," according to which the almost invisibly slow geological processes which we may now see operating around us, are typical of the behaviour of the crust of this planet for incalculable periods of time ; for even the slowest changes, if sufficient time is allowed them, are capable of producing the most stupendous results. Lyell may be said to have extended the age of the earth *ad infinitum.* Just as Galileo removed all barriers of space, Lyell removed those of time. Their joint achievement was to present to humanity a universe infinite both in space and time—a staggering conception.

Results of Lyell's Theory.—Though Lyell's boldness disturbed a good many of his contemporaries, those biologists who were engaged upon seeking the origin of species were thankful to one who had removed the chief obstacle to the solution of their difficulties. They were now relieved of one embarrassment : Lyell gave them the power to draw on the Bank

of Time to any extent; bankruptcy was no longer possible.[1]

Indeed, Lyell seems himself to have been convinced of the evolutionary origin of species (though the mode of its operation still remained a mystery for him no less than for the biologists themselves). In fact, it became quite evident that the idea of "continuity" which the *Principles of Geology* had established in the inorganic world, must be equally applicable to the organic world.

Darwin.—The theory of a common descent of species had occurred, as early as 1837, to an enthusiastic student of Lyell's writings, who was also a personal friend. Charles Darwin had collected much geological, botanical, and zoological matter on his voyage with the *Beagle* round the world, and continued for twenty years to accumulate an immense volume of *data* to substantiate a theory which had first suddenly suggested itself to him in 1838 as the result of reading for amusement Malthus' *Essay on the Principle of Population.*

This celebrated book, first published in 1798, had attempted to describe the forces which ensure the multiplication, or check the increase of population. The proposition laid down by Malthus was that population tends to vary with the means of subsistence. He had studied his problem from a social or political point of view, but the same principle was seen by Darwin to apply to all living creatures. Two forces are seen everywhere in conflict: (a) the luxuriant powers of reproduction possessed by and exercised

[1] As a matter of fact, biologists soon demanded more than even Lyell's geology could give them. Recent discoveries about the nature of matter have, however, further extended the possible age of our planet.

by each species ; (b) the difficulties and obstacles by which the species tend to be eliminated. The contest between the powers of reproduction and those of elimination—this " over-production " and " crowding-out "—is what was afterwards termed the " struggle for existence."

" NATURAL SELECTION." — Darwin's momentous theory was that this struggle, proceeding for untold ages, had resulted in the continual formation of new species. Granted that the numerous offspring of any individual member of a species tend to vary, those variations survive which happen to be best fitted to cope with the environment. These in their turn leave offspring, the variations and the selections are repeated, and so on *ad infinitum ;* and the result is that entirely new species are formed by a long process of insignificant changes. This, briefly put, is the celebrated theory of " Natural Selection."

The habit of scientific caution was characteristic of Darwin, who at first would not write down " even the briefest sketch " of his hypothesis, but devoted nearly twenty years to the accumulation of evidential *data.* His friends continually warned him that he would be forestalled, and this actually occurred, as is well known, in 1858, when the book which was to give the new theory to the world was already half written. The naturalist, Alfred Russell Wallace, on a collecting expedition in the East Indies, " in a flash of insight " while sick with fever, found the same solution of the mystery that had puzzled biologists so long. Wallace's letter to Darwin, containing the abstract of his theory, came " like a bolt from the blue."

The behaviour of the two men was worthy of the highest traditions of scientific research. The matter

was put into the hands of Lyell, and Wallace's paper, together with certain extracts from Darwin's unpublished notes, were read before the Linnean Society, and the preparation of Darwin's book was hurried on. In November, 1859, *The Origin of Species* was published.

Results of Darwin's Theory.—The importance (for the general trend of thought) of this joint achievement of Darwin and Wallace was considerable, and could not but be regarded as an extension of the mechanical theory. The origin of species might still to some extent remain mysterious (for "natural selection" was soon realised to be only one of many factors at work in evolution), yet the area of mystery was patently reduced, and the "inexplicable" driven further back. A formula had been provided, which seemed to be as valid, and likely to prove as permanent and fruitful in biological research as Newton's law of gravity had been in the realm of physics.

In point of fact, Darwin had only substituted new problems of "variation" and "heredity" for the old one of the diversity of species; but an impression was created by the new discoveries that a purely mechanical explanation of the origin of life and even of mind was within reach.

The Descent of Man.—With regard to "mind," the impression was re-inforced by Darwin's next book —the *Descent of Man*, where the gap between man and the animals was finally bridged. The work was merely an extension of the principles previously applied by him, and as a theory it had been present to Darwin's mind as far back as 1837. As soon as he had become "convinced that species were mutable productions," he could not "avoid the belief that man

must come under the same law."[1] Indeed the Descent was nothing more than a corollary to the *Origin of Species*. The earlier work contains the whole of Darwinism.

THE POSITION REACHED.—And with the full publication of Darwin's theories a point was reached when a more or less consistently materialistic position seemed possible. The foundations of such a position had been strengthened by the scientific atomism of Dalton, and the results of German research in the field of *organic* chemistry seemed to open up possibilities of expressing even life in terms of matter. And, finally, the evolutionary hypothesis had reduced some of the most obscure biological problems to manageable proportions. The prospects for a purely naturalistic philosophy were phenomenally bright.

[1] Darwin, *Life*, Vol. I, p. 93.

CHAPTER IX

MATERIALISM AND AGNOSTICISM

From Science to Philosophy.—The record of certain important scientific discoveries has occupied us in two recent chapters, and it is now time to examine the philosophic results that were drawn from them. It is true that the generalisations drawn from the results of scientific research were sometimes hasty, and not always sanctioned by the gifted minds to whom these results were due; yet they were assured a popular reception, and exercised an immense influence. It is not always the most accurate thinkers whose ideas gain the widest currency.

Discredit of Romanticism.—The Idealistic movement in philosophy which we have seen flourishing in Germany at the beginning of the nineteenth century, had begun, after the lapse of a generation, to decline.[1] The causes of decline, as often happens, were in part, at least, other than intellectual. Hegelianism had become associated with political reaction, and "a philosophy has lost its charm when it enters the service of absolutism." And a rising spirit of enterprise in commerce and industry also contributed to a change of attitude, for as material interests

[1] "If we wish to fix a definite point to describe as the end of the idealistic period in Germany, no such distinctive event offers itself as the French Revolution of July, 1830" (Lange, *History of Materialism*, E.T., Vol. II, p. 245).

develop, men have less leisure for speculation, and often lose their taste for ideals. Probably there should also be taken into account the sentimentality that had attached itself to Romanticism and with which men were sated. This revolt has its most pointed expression in the prose writings of the poet Heine, who attacks with satiric bitterness "the new troubadours, so morbid and somnambulistic, so high-flown and aristocratic, and altogether so unnatural."

METAPHYSICS REJECTED.—The reaction against the philosophy of Romanticism took the form of a complete revolt against speculative philosophy. But instead of going back to Kant, and taking up a vigorously critical attitude, it took refuge in the prejudices of "common sense." The new movement must be associated in the first place with a French thinker, Auguste Comte (1798–1857), who made the attempt to substitute scientific and *positive* knowledge for the vague speculations which had hitherto passed for philosophy. He was, in fact, the founder of that system of ideas known as Positivism, which (as we shall see) gained great vogue later, especially in England. Comte's doctrine was that, all spheres of Nature now being brought under the sway of positive science, the time had arrived for men, when constructing their conceptions of life and the world, to reject all but such ideas as positive science can accept. The age of theology and speculation was past; the new age of positive science, where both imagination and argumentation should be subordinate to observation, was at hand. Comte, as is well known, became the founder of what he hoped might develop into a new Catholicism—the "Religion of Humanity," and an atmosphere of moral idealism permeates his thought.

German Extremists.—In Germany, the home of Romanticism, the revolt took a radical shape in the hands of writers like Ludwig Feuerbach (1804–72) and Büchner. "I unconditionally repudiate absolute, self-sufficing speculation—speculation which draws its material from within," says the former, in the Introduction to his *Essence of Christianity*[1] (1841) and asserts that he "places philosophy in the negation of philosophy." Büchner, a far less acute thinker than Feuerbach, adopts a similar attitude, protests against pedantry, and appeals (the appeal is always dangerous) to common sense:

"Expositions which are not intelligible to an educated man are scarcely worth the ink they are printed with. Whatever is clearly conceived can be clearly expressed."

It is not surprising that the book *Force and Matter* (1855)—in the preface to which these sentiments are expressed—went through sixteen editions in thirty years and was translated into most European languages. It is an extreme expression of the most thoroughgoing materialism, and the circumstance that its conclusions were acceptable neither to cautious scientists nor to critical philosophers, did not compromise its authority with the general public. As was only natural, for materialism is a creed for which the evidence is all on the surface, and to which the objections, being less obvious, escape notice. And Büchner's pleas for intelligibility and clearness, though in some sense justified by the inconceivable pedantry of much German metaphysics, was, in point of fact, only a form

[1] A famous book which, though negative in its conclusions, places its author alongside Schleiermacher as one of the founders of the modern science of Religious Psychology.

of cant ; for " there are difficulties lying in the subject-matter itself which cannot be banished from the sphere of philosophy." Appeals to popular prejudices are not a more legitimate form of philosophic, than of scientific controversy ; serious thinkers do not thus stoop to the expedients of the politician.

Effects of Darwin's Theory.—It would be a serious mistake, then, to imagine that materialistic naturalism had to wait for the publication of the *Origin of Species* (1859) before it could become a formidable theory. And yet the appearance of Darwin's book had important effects, and among these is to be reckoned a certain weakening of the old " Argument from Design," according to which the complexity and delicacy evident everywhere in the world of nature, could not be attributed to chance, but pointed to the existence and activity of a divine Designer. Paley, during the eighteenth century, had elaborated the argument with a wealth of detailed instances of " contrivance " :

" The pivot upon which the head turns, the ligament within the socket of the hip-joint, the pulley or trochlear muscles of the eye ; the epiglottis, the bandages which tie down the tendons of the wrist and instep," and so on.

And it was not so much the doubt cast by it upon the separate creation of particular species that was the disturbing element in Darwin's hypothesis (few men now regarded the book of *Genesis* as a manual of natural science, or faith in it, as such, as a matter of religious obligation) ; it was rather that the new doctrine of " natural selection " seemed to invalidate the " argument from design." Design or chance had been the alternatives offered by Paley, and chance only

had to be mentioned to be rejected; but Darwin made it possible to escape from the dilemma. He showed how, if certain conditions were granted, the whole process of the manufacture of species would naturally and inevitably follow. Neither design nor chance was the explanation: there was another alternative, *the influence of environment.* Thus Paley's instances of elaborate "contrivance" were explained by Darwin as instances of adaptation. The environment under which these organs had developed had made them what they were; they could not, under the given circumstances, have been different. As a very lucid writer puts it:

"Before Darwin's great discovery, those who denied the existence of a Contriver were hard put to it to explain the appearance of contrivance. Darwin, within certain limits and on certain suppositions, provided an explanation. He showed how the most complicated and purposeful organs, if only they were useful to the species, might gradually arise out of random variations, continuously weeded by an unthinking process of elimination."[1]

Darwinism Exploited.—In fact, it became evident that popular materialism had been strongly reinforced by the new biology; and though Darwin himself was cautious in adding philosophic or religious corollaries to his own propositions, some of his more eager disciples did not hesitate to fill in his blanks, and to draw conclusions which the master was too conservative, too blind, or perhaps too scientific to sanction.

The distinguished zoologist Haeckel (1834–1919) may be reckoned the most notable amongst these. He was one of the first German scientists to give his

[1] Balfour, *Theism and Humanism*, p. 36.

adherence to Darwin, who seems to have considered him too zealous a disciple. "Your boldness sometimes makes me tremble," he wrote (November 19, 1868). It is not every scientist who can perceive the limits of an hypothesis, or who insists so conscientiously as Darwin did, upon the necessity for its verification.

HERBERT SPENCER.—Though there were not wanting in England writers to exploit Darwinian theories in the interests of a narrow secularism, their work was not of first-rate importance, and need not detain us. A new evolutionary philosophy was, however, worked out by a conscientious thinker of a different calibre—Mr. Herbert Spencer. He indeed may be described as the Aristotle of a new world-view. He attempted to co-ordinate and unify all human knowledge, and to present the world with a final philosophy based upon the *data* supplied by natural science. To this ambitious task he devoted a lifetime of patient work, broken by intervals of ill-health. In 1850 the *System of Synthetic Philosophy* was projected; its *First Principles* were published in 1862, but it was not until 1896 that the gigantic enterprise was complete.

Spencer was inspired neither by hostility to religion in general, nor to Christianity in particular. The motive of his work was a more honourable one. He felt, with many of his contemporaries, that the foundations of the old religion were no longer secure, and that the old sanctions of morality were already gravely compromised; and he wished to supply a new creed and a new discipline in the place of these. His principal objects were social and ethical. And in this important respect he may be associated with Comte. Both were sociologists and moralists before they were philosophers,

which accounts for their overlooking and underestimating various important philosophic difficulties.

A few remarks about Spencer's system are here not out of place. He attempted to reduce experience to a unity by seeking evidence for the existence of a single and universal *law*. This unifying principle he found in a general law of evolution. He formulated this law in language which is perhaps less obscure than it seems, and which practically amounts to this, that there is a perpetual process going on which reduces disorder to order, undifferentiated sameness to specialised variety.[1]

The *First Principles* was published before the *Origin of Species*, and the confirmation which Darwin's work supplied to Spencer's theory must have recommended the latter to the minds of scientifically trained thinkers. Moreover, Spencer sanctioned a hopeful outlook; evolutionary optimism was an attractive and an idealistic, as well as a reasonable philosophy. It demanded the subordination of the individual to society, it urged the necessity of self-discipline and of industry, and pointed (if these conditions were fulfilled) to a brighter future, and to a new humanity. The generous idealism of the following passage is characteristic of Spencer's outlook, and of those who thought—and hoped—with him; it occurs at the end of his *Principles of Ethics*:

"The highest ambition of the beneficent will be to have a share—even though an utterly inappreciable and unknown share—in 'the making of Man.' . . . As time goes on, there will be more and more of those

[1] "Evolution is an integration of matter and concomitant dissipation of motion, during which the matter passes from an indefinite incoherent homogeneity to a definite coherent heterogeneity, and during which the retained motion undergoes a parallel transformation."

whose unselfish end will be the further evolution of Humanity. While contemplating from the heights of thought that far-off life of the race never to be enjoyed by them, but only by a remote posterity, they will feel a calm pleasure in the consciousness of having aided the advance towards it."

Spencer, then, evidently deserves the important place that he occupies in the history of thought. For though he was forced, for lack of those final scientific results which he vainly hoped might soon be forthcoming, to leave some vital gaps in his scheme,[1] he had made an imposing attempt to systematise and unify all human experience. And his attempt to base an idealistic morality upon sure grounds of natural science was valuable and important.

Spencer's Philosophy of Religion.—At the same time, Spencer could not remain satisfied with a mere *description* of natural phenomena, however complete and comprehensive such description might seem; he desired to offer, besides this, an *explanation* of these phenomena—how did they come to be, and how do they continue to exist? To provide this explanation, Spencer postulated the existence of an Unknown Power which is at once the origin and the sustaining ground of everything. This power he regarded as lying quite out of range not only of the human senses, but of the human intellect. It was not only unknown but *unknowable*. This celebrated doctrine of the Unknowable is not the least interesting or important part of Spencer's system, and it is perhaps more

[1] Spencer confessed that of the *Synthetic Philosophy* "two volumes are missing," the two important volumes on Inorganic Evolution, leading to the evolution of the living and of the non-living (cf. criticisms by Professor James Ward in his *Naturalism and Agnosticism*, Lecture IX).

germane than any other speculation of his to our present subject, as this *terra incognita* was allotted by him to religion as its peculiar province. He hoped that the undisputed possession and occupation by religion of this territory might put an end to its perpetual conflict with science, and substitute for this a reasonable, if not cordial, understanding. Science might contentedly appropriate the sphere of the knowable, and leave to religion the undefined and perhaps infinite area of the unknowable ; and he hoped this division of labour would be both fruitful and permanent.

The Victorian Agnostics.—Through this doctrine of the Unknowable, Herbert Spencer was the father of that form of belief or disbelief which was pertinently named Agnosticism by the most celebrated of its exponents—Huxley. This combination of Positivism in science with Agnosticism in religion and philosophy, became highly popular in a wide circle in England during the last third of the nineteenth century, especially among the scientifically educated. Leslie Stephen, with the pride of a disciple and the pardonable zeal of a propagandist, claimed for it the distinction of being " the religion of all sensible men."

This austere faith owed much to the qualities of those who preached it. Their wide culture, their power of literary expression,[1] their intellectual vigour, and above all their moral earnestness and social enthusiasm recommended what had otherwise seemed a barren and unpromising creed. The generous humanitarian sympathies of Comte supplied the

[1] For an instance of the masterly work turned out by this school and of the attractiveness of their propaganda, read Huxley's lecture, " On a Piece of Chalk," delivered to the working men of Norwich during the meeting of the British Association in 1868.

idealistic elements without which no faith can become popular, and the apparent stability of its scientific basis seemed to those impatient of speculative doubt, a great rock in a desert of shifting sand. This new scientific Humanism had an immense vogue, and its effects upon national life were, on the whole, of a quite healthy character. Occasional lapses into intolerance, no doubt, occurred; but much may be excused in the self-confidence of a new faith, not yet tested by the experiences and the criticisms of years.

Theological Polemics.—The attacks of orthodox apologists upon this new orientation, though carried through with the best intentions, were too often conducted on mistaken lines and certainly on too narrow a front. A particular theory of scriptural inspiration (now widely abandoned), and of the miraculous, seemed to obsess the controversialists. Nor were the Agnostics (it must be confessed) any more alive to the real issues. Hence, to the modern student, an oppressive atmosphere of deadness and sterility seems to brood over these vigorous but superannuated polemics; and hence the complete oblivion into which this literature has fallen. The saying is profoundly true that "nothing so quickly waxes old as apologetics." Even the contributions to the subject by so accomplished a journalist as Huxley—his *Essays on Science and Christian Tradition*—can only be read by those whom an almost Teutonic industry characterises. Once so eagerly perused and earnestly pondered, the controversial literature of this interesting epoch (which now seems so remote) reposes on the higher shelves of libraries, accumulating the peaceful dust of oblivion. These projectiles have, in fact, done their work, and if they have proved less fatal than was hoped by those

who launched them, they were dispatched with good intentions, and their explosion cleared the air.

The most effective method of attack would have been to suggest that what was good in the new system was as old as Christianity, and that the rest was disputable science and still more disputable philosophy, The latter half of this task was, as we shall subsequently find, creditably performed by an important school of critical thinkers. But its former half, i.e. the task of proving that what was valuable in the new Humanism, was Christian—might, one would suppose, have been more successfully performed by the official champions of orthodoxy. These might have left science to the scientists, to have left off advertising their own incompetence in that sphere by passages of arms such as took place between Bishop Wilberforce and Huxley at the Oxford meeting of the British Association in 1860, which are never very desirable, and always discreditable to the discomfited party.[1]

Illogicality of Naturalistic Idealism.—In point of fact, " the religion of all sensible men " (in spite of its philosophic weakness) was equivalent to Christian stoicism ; its social enthusiasm, its humanitarianism, its conscientious truthfulness, were the fruit of a stock grown on Christian soil. Its ethical presuppositions were entirely Christian, nor were they sanctioned (in spite of Herbert Spencer's elaborate apologetic) by the new biology. Nietzsche was a far more legitimate child of Darwinism than was Huxley. Indeed, towards the close of his life, some doubts invaded the mind of the latter, and he was constrained by an intellectual sincerity which does him and his school the highest

[1] For this famous encounter, see *Life of Huxley*, Vol. I, pp. 179–89, and *Life of J. R. Green*, pp. 44, 45.

credit, to utter a word of warning. We refer to his famous *Romanes Lecture* of 1894.

The thesis of this important utterance was that the field of human interests is a narrow heritage carved out from a hostile environment into which it is destined one day to relapse. It is a cultivated garden with the wilderness all around; created only at the cost of infinite sacrifice and perpetual toil, and preserved only with difficulty. The implacable jungle seeks everywhere to encroach on the borders of the clearing, whose ultimate engulfment can only be postponed, not prevented. Two quotations may suffice:

"Let us understand, once for all, that the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it."

"The theory of evolution encourages no millennial expectations. If, for millions of years, our globe has taken the upward road, yet, sometime, the summit will be reached, and the downward route will be commenced. The most daring imagination will hardly venture upon the suggestion that the power and intelligence of man can ever arrest the procession of the great year."[1]

Pessimism.—Coming, as it did, at the end of a generation of dogmatic optimism, this pronouncement is symptomatic of a certain disillusionment which had already begun to mar the fair picture of Positivist prophecy. The human race seemed destined to an ambiguous future; the parabola of progress would

[1] As we shall subsequently find, this cosmic pessimism is less well grounded than Huxley believed. Still, Spencer's own scientific presuppositions were the same as Huxley's, so that the passage remains a pertinent criticism of the Evolutionary Philosophy as elaborated by him.

one day reach its summit, and the fall begin. At last upon our planet the episode of Life would pass, and be neither forgotten nor remembered; the world would sink into the eternal silence, from which for one transitory and insignificant moment, it had awakened.[1]

NIETZSCHE.—As might have been expected, it was in Germany that the logical conclusions of a naturalistic outlook were drawn. Here, philosophic pessimism had already been introduced by Schopenhauer (1788–1860), and his disciple Nietzsche was not afraid to formulate a scheme of ethics based on the conception of "the survival of the fittest," and equivalent to an apotheosis of barbarism. The virtues of self-assertion, ruthlessness, and pride were to eradicate the vices of abnegation, pity, and humility. Christian morality was a disease; Christianity itself was the appropriate product of the degenerate epoch, and of the loathsome environment that gave it birth. This radical thinker, free from English "compromise," could be satisfied with no morality which was parasitic upon Christianity. He had clearness of vision to see whither the naturalistic road would carry its pious wayfarers. To him the moral idealism of Spencer was moonshine or stupidity—"the milk of pious sentiment."

SIGNIFICANCE OF NIETZSCHE.—Nietzsche has come in for a fair share of abuse, but it is only just to say that philosophy stands heavily endebted to this thinker. He was not afraid to draw logical conclusions,

[1] It is instructive to observe that a similar note of latent pessimism is struck by the last notable survivor of the School we have endeavoured to describe. Viscount Morley at the end of his *Recollections* (1917), questioned as to the outcome of those generous hopes entertained with such confidence by his contemporaries, is compelled to ejaculate with philosophic brevity, *circumspice*, as he contemplates a spectacle of unparalleled horror.

and to put questions which more conventional philosophers had preferred should remain in the background.

It is well for a moralist to arise, once in a generation, who will clear his own mind of cant and, without undue respect for the conventions, approach the really fundamental questions in a spirit of sincerity. The extravagant impieties of Nietzsche may have shocked his hearers, but they have cleared the air. He exposed, perhaps with too little *finesse*, the nakedness of Naturalism, and tore off that mantle of idealism under which it had been masquerading. And he may be said, by so doing, to have written *finis* at the foot of a chapter in the history of philosophy.

CHAPTER X

REACTIONS IN PHILOSOPHY

VICISSITUDES OF IDEALISM.—At the beginning of the last chapter we noticed the early collapse of idealism in Germany. But the prophets of Romanticism, when they were no longer honoured at home, found an hospitable reception elsewhere, and especially in England. Indeed, even before the prestige of idealism had begun to decline in Germany, Englishmen had been introduced to it by the writings and translations of S. T. Coleridge (1772–1834) and Thomas Carlyle (1795–1881). These two popularisers of German ideas were *littérateurs* rather than professional philosophers, but for that very reason their vogue and influence were the wider.

COLERIDGE.—Coleridge was in spirit a genuine Romanticist ; being, as were some of the most notable of the German school—e.g., Goethe and Schiller—a poet as well as a philosopher. In his *Biographia Literaria* he has left behind the story of his intellectual and spiritual development. He acknowledges his debt to Kant, to the Romanticists, and in particular to Schelling, whose " intuitionism " was naturally congenial to him. Coleridge was never able to embody his philosophical creed in any single work ; he does not seem to have possessed the necessary power of application. He was unfortunate in being a man of weak

character, and his ineffectiveness struck his contemporaries. But in spite of these disadvantages—his sentimentality, the lack of clearness of his thought, his weakness for opium—he certainly exercised an important influence, especially in the realm of theology. His ideas, though vague, were calculated to awaken the speculative habit, and, introduced as they were, to a wide circle, were fruitful and stimulating. English theology had been, in the eighteenth century, of an arid kind, and the English philosophical tradition lacked, for the most part, appreciation of those deeper aspects of reality which had appealed to German thinkers. Coleridge, by introducing German speculation to his countrymen, was able "to free theology of some of its narrowness, and to deepen and enlarge the spiritual outlook of his age."[1]

THOMAS CARLYLE.—Carlyle was a man of a very different temper, whose attitude towards Coleridge was "half contemptuous, half compassionate." A typically Carlylean characterisation of him may be found in the *Life of Sterling:*

"He was thought to hold—he alone in England—the key of German and other Transcendentalisms. . . . A sublime man, who alone in those dark days escaped from black materialisms and revolutionary deluges with God, Freedom, Immortality, still his. The practical intellects of the world did not much heed him, or carelessly reckoned him a metaphysical dreamer; but to the rising spirits of the young generation he sat there as a kind of Magus, girt in mystery and enigma. . . ."

"The good man . . . gave you the idea of a life

[1] Storr, *Development of English Theology in the Nineteenth Century*, p. 329. See which book for a valuable chapter upon Coleridge.

that had been full of sufferings . . . the deep eyes, of a light hazel, were as full of sorrow as inspiration; confused pain looked mildly from them, as in a kind of mild astonishment. The whole figure and air, good and amiable otherwise, might be called flabby and irresolute; expressive of weakness under possibility of strength . . . He spoke as if preaching—preaching earnestly and hopelessly the weightiest things."

Carlyle himself had all the character and industry that Coleridge lacked, and it was another side of German idealism that had appealed to him. The Scotchman was of the same fibre and stock as that other half-Scotchman, Kant. Here was the source from which he had drawn his inspiration. We see in Carlyle the same moral earnestness, the same "toughness" of thought, the same absence of "sentimental moonshine." From Kant, too, he derives a vigorous independence of thought, a religious respect for individuality, a horror of shams and affectation. Kant was a true child of the Reformation, and Carlyle is a genuine disciple.

In a single important respect, however, he differed from (and improved upon) his master. Kant lacked, or at least did not display, the saving grace of humour; in Carlyle this quality looks out from every page—keen, satirical, sometimes bitter, sometimes grotesque; he ridiculed his own generation, its vices, its prejudices, its superstitions.

Sartor Resartus.—For our purpose, *Sartor Resartus*—that profound and humorous book—is Carlyle's masterpiece: here all the characteristic Kantian doctrines may be found.

The "philosophy of clothes"—which is the quaint title behind which Kantian idealism is made to

masquerade—starts from the thought that just as an acquaintance with his clothes will not reveal to us the man, so an acquaintance with *phenomena* (which is all that science can claim to give us) cannot reveal to us the real ground of existence, which remains an inscrutable mystery. We must "look on clothes till they become transparent," if we could understand reality.

"To the eye of vulgar Logic what is man? An omnivorous biped that wears breeches. To the eye of pure Reason what is he? A Soul, a Spirit, and divine Apparition."

And so with Nature; to science it is a mechanism, to the understanding heart it is "the living garment of God."

"It is written, the Heavens and the Earth shall fade away like a Vesture; which indeed they are: the Time-Vesture of the Eternal. . . . The whole External Universe and what it holds is but Clothing. . . ."

The visible world is but a symbol of a profound and awful reality; and all Nature's products, in their degree, symbols as well: but of these, man is the highest. "The true SHEKINAH is Man: where else is the GOD'S PRESENCE manifested, not to our eyes only, but to our hearts, as in our fellow-man?"

This leads up to the essential doctrine of the Kantian system: that man is a creature of two worlds, who has a foot in either; hence in the phenomenal world he can never find satisfaction.

"Man's Unhappiness, as I construe, comes of his Greatness; it is because there is an infinite in him, which, with all his cunning, he cannot quite bury under the Finite. Will the whole Finance Ministers and Upholsterers and Confectioners of modern Europe

undertake, in jointstock company, to make one Shoeblack Happy? They cannot accomplish it, above an hour or two, for the Shoeblack also has a Soul quite other than his Stomach. . . ."

"There is in man a HIGHER than Love of happiness: he can do without happiness and instead thereof find Blessedness! has it not been to preach forth this same HIGHER that sages and martyrs . . . have spoken and suffered; bearing testimony to the God-like that is in man?"

CARLYLE'S INFLUENCE.—In spite of Carlyle's strange literary mannerisms and his grotesquely Germanic phrases, his writings had great attractiveness for those of his contemporaries who felt themselves smothered by the materialism and utilitarianism of early Victorian England. He was able to re-vitalise idealism amongst them. Moreover he appealed strongly to those to whom the Coleridgean speculations were uncongenial. The strongly developed *moral* element, both in his writings and in his own somewhat stern and austere personality—what Taine called his "puritanism"—appealed strongly to a certain side of English feeling. His countrymen felt that his was a native genius that they could understand. In fact we may say that the influence of Carlyle, especially among the young and generous minded, has been incalculable in extent and invaluable in quality. Spiritual life in England stands under a deep obligation to him.

ROMANTICISM AT OXFORD.—Englishmen were thus not entire strangers to German idealism, which had possessed its interpreters in the earlier half of the nineteenth century. Not, however, until it had experienced a decline in Germany (a reaction which occupied our attention in the last chapter), did

Romanticism become naturalised in England by being adopted in academic circles.

Among the most notable of English idealists was T. H. Green—fellow and tutor of Balliol College, Oxford. In this thinker we have a widely different type of mind from that of either Coleridge or Carlyle. He was a thinker rather than a poet or a prophet, and he belonged to what we have noticed as the intellectualist—i.e. Hegelian—wing of Romanticism,

Green's chief work was his *Prolegomena to Ethics* (published posthumously in 1883), where arguments, which were familiar to those acquainted with Hegel, presented themselves. Green begins with an analysis of experience, and leads to the conclusion that Nature —if by it we mean " the connected order of experience "—implies " something other than itself, as the condition of its being what it is." And " of that ' something ' we are entitled to say, positively, that it is a self-distinguishing consciousness " (section 52).

If these conclusions be valid, the bottom falls out of Naturalism, for if nature " implies something other than itself," it does not stand alone ; and that nature *does* stand alone is the beginning and end of all naturalist theory. And, furthermore, this " something other than itself," which Nature involves, is " a self-distinguishing consciousness " ; i.e. something to which we can attribute personality.

GREEN AND SPENCER CONTRASTED.—This theory has only to be compared with that of Herbert Spencer for a fundamental difference to declare itself. The two systems do indeed adopt as axiomatic the conception of the uniformity and unity of nature, which works in accordance with a single law. But Spencer saw in that law the expression of a blind force, an unknowable

power, of which it would be no more and no less true to say that it was "spiritual" than that it was "material." But for Green the law was the expression of a spiritual principal analogous to our own intelligence—a manifestation (to use theological language) of God.

F. H. Bradley.—Undoubtedly the most notable of English Hegelians is F. H. Bradley, whose metaphysical essay, *Appearance and Reality*, was a work of genuine originality. The book is not of a type to make much appeal outside academic circles, though it is written in an easy and attractive style: its results may seem, to the unsophisticated reader, somewhat too ambiguous. "Ultimate Doubts" is the title of the last chapter, and "It costs us little to find that in the end Reality is inscrutable," is a remark not uncharacteristic of the author. Yet this really profound thinker and acute reasoner played an important part in helping to discredit that negative dogmatism which was so much in vogue during his own lifetime. He pointed out the limits beyond which natural science could not transgress without lapsing into "dogmatic superstition."

"Too often the science of mere Nature, forgetting its own limits and false to its true aims, attempts to speak about first principles. It becomes transcendent, and offers us a dogmatic and uncritical metaphysics" (p. 284).

Though the fault has not always been on the side of the scientists: "Metaphysics itself, by its interference with physical science, has induced that to act, as it thinks, in self-defence, and has led it, in so doing, to become metaphysical. And this interference of metaphysics I would admit and deplore, as the result

and the parent of most injurious misunderstanding. . . . So long as natural science keeps merely to the sphere of phenomena and the laws of their occurrence, metaphysics has no right to a single word of criticism " (p. 285).

This critical handling of the problem of the relations of science and philosophy did much to draw attention to the confusion of thought lying at the base of much popular materialism. It began to be realised that the principles of physical science are only fruitful of good results in the sphere properly belonging to them ; and that the uncritical use of these principles results in a hybrid philosophy, which is neither sound science nor rational metaphysics.

A. J. BALFOUR.—Before Bradley's essay was published, a somewhat similar line of criticism had been developed by Mr. A. J. Balfour in his *Defence of Philosophic Doubt* (1879). Its title sounds unpromising, but the book voiced a demand for a rational philosophy of science which was practically non-existent at that time ; and consequently, in the absence of any adequate examination of the principles of science, uncritical dogmatism flourished quite unchallenged. Balfour, elsewhere, indicates the objects with which he wrote the book—to elicit from the disciples of natural science a *rationale* of their method :

" A full and systematic attempt, first to enumerate, and then to justify, the presuppositions on which all science finally rests, has, it seems to me, still to be made. After the critical examination which I desiderate has been thoroughly carried out, it may appear that at the very root of our scientific system of belief lie problems of which no satisfactory solution has yet been devised."[1]

[1] *Foundations of Belief*, p. 98.

Thus Balfour drew attention to the fact that the common-sense philosophy of naturalism rested upon a tacit agreement to overlook certain important problems which are the indispensable preliminaries to any thinking which can be called critical, or lay claim to be regarded as philosophy in the strict sense. That some of these problems seem artificial, and the questions raised by them gratuitous, to the eye of "common sense" is an irrelevant consideration, for "nothing stands more in need of demonstration than the obvious."

Naturalism Checked.—Thus Bradley and Balfour between them, merely by adopting a critical attitude, created an embarrassing situation for naturalism. Between them these writers administered a serious check to that naively uncritical dogmatism which, backed by the prestige of natural science, had sought to impose itself on the world as a new orthodoxy less liberal, in some ways, than the old.

Nor did they stop short at negative criticism, but substituted (according to the idealistic tradition) a spiritual view of reality for the mechanistic materialism that had become so popular. *Appearance and Reality* is a book of which the trend might seem too obscure, but it ends with a note that is definite enough :

"Outside of spirit there is not, and there cannot be, any reality ; and, the more that anything is spiritual, so much the more is it veritably real," are Bradley's closing words.

As for Balfour, he leads his readers up to a point which he describes as "the threshold of Christian Theology." And having propounded the perplexities in which the "common sense" philosophy (on which naturalism depends) is involved, he says :

"I do not believe that any escape from them (the perplexities) is possible, unless we are prepared to bring to the study of the world the presupposition that it was the work of a rational Being, who made *it* intelligible, and at the same time made *us*, in however feeble a fashion, able to understand it." [1]

Revival of Idealism in Germany. Lotze.—We have perhaps dwelt at too great length upon the backwash of the idealistic wave in England, for idealism is not a native philosophy amongst us; possibly, because we are not metaphysically-minded in the same sense as are the purer Teutonic breed. And it is time to pass on to pay a brief tribute to the work of a German philosopher who accepted the mechanical theory in its totality, without sacrificing what we may call the spiritual values of existence.

Hermann Lotze (1817–1881) was inclined to feel that the weakness of Romanticism lay in a tendency to despise or overlook what Kant had called "the fertile bathos of experience." The Romanticists had too often neglected natural science, which, in the shape of naturalistic materialism, had its revenge by destroying them. Büchner was the Nemesis of an idealism which was at once vague and sentimental.

Lotze's "Microcosmos."—Lotze's attitude and method are conspicuous in his well-known work, which took him eight years to complete (1856–1864)—the *Microcosmos*. After guiding his readers "through the realms of natural phenomena and historical evolution," thus constructing a sufficiently stable basis out of *facts*—he leads them on to an ideal world composed of what he calls "values."

His position may thus be summarised: The world

[1] *Foundations of Belief*, p. 309.

presents itself to the observer in three aspects—(1) The world of individual " things," which are bewildering and intricate ; (2) the laws (i.e., " laws of nature ") which the human intellect has discovered among them, thus finding regularity and order ; (3) the " values " which the human soul applies to things, and which it is the human task to cultivate.

This world of ideals or values (3) is that for the sake of which the worlds of phenomena and law (1 and 2) exist. These (1 and 2) constitute respectively the material *in* which, and the forms *through* which, the world of " values " is to be realised.[1]

Thus phenomena and law are the raw material out of which " values " are created ; and these " values " themselves constitute (in the eyes of Lotze) a higher reality. Thus the central doctrine of his system is that the truly Real is what has supreme worth : it is *worth* that creates reality. The paradoxicality of this may make it difficult to accept ; but Lotze is only expressing in his own way the fundamental thesis of all forms of idealism, that " the ideal is the real " ; that the world of phenomena is secondary to and dependent upon a " world of spirit," or an " ideal world."

Lotze himself in the introduction to the *Microcosmos*, expresses what is at once the foundation and the kernel of his system : he says it is his purpose to show " *how absolutely universal is the extent*, and at the same time how *completely subordinate the significance, of the mission which mechanism has to fulfil in the structure of the world.*" (E. T., p. xvi.)

Mechanism is universal, *because* it is the raw material, so to speak, out of which reality is to be made. That

[1] For this summary of Lotze's doctrine, see Merz, Vol. III, p. 615 and ff.

reality can be expressed in terms of mechanism is true, just as a poem can be described as a scrap of paper scratched upon with a pen; but this reduction of reality to its lowest terms, ends by emptying reality of content. Mechanism is a *universal* feature, but it is a *subordinate* feature, of reality. Nature requires, if we are to arrive at the truth about it, not only to be described and analysed, but also interpreted in the light of the idea of *value* or *worth*.

Lotze and Theology.—Lotze's theories exercised an important influence upon the development in Germany and elsewhere of a type of theology known as Ritschlianism. Albrecht Ritschl, a disciple of Lotze, attempted to dissociate religion from metaphysics, and to base it upon "judgments of value." Christian dogma, for instance, is an attempt to express, in philosophical terms, *the unique value to humanity of the moral and religious consciousness of Christ.* So far as a dogma is faithful to that central idea, and makes a genuine attempt to express it, so far—and so far only—is it true.

This type of theology, uniting itself with certain philosophical tendencies which will engage our attention later, became the basis of what was known as the Modernist movement in the Roman Catholic Church.

Conclusions.—Thus in the nineteenth century, in England (and indeed on the continent also) the idealistic attitude, though it sometimes might seem compromised, was never submerged; in spite of the materialistic outlook of an age only too preoccupied with scientific discovery and commercial expansion.

CHAPTER XI

SOME RECENT TENDENCIES IN PHILOSOPHY

THE PHILOSOPHY OF SCIENCE.—In the last chapter we heard A. J. Balfour complaining of the absence of "a full and systematic attempt, first to enumerate, and then to justify, the presuppositions on which all science finally rests." And Mr. F. H. Bradley also drew attention to the absence of any critical philosophy of science in England. The need was for scientific standpoints to be investigated *de novo;* and the process had, as a matter of fact, already been begun on the Continent.

MACH.—Ernst Mach, Professor of Physics at Prague, and subsequently Professor of Physics at Vienna (thus combining the rôles of scientist and metaphysician—always a highly instructive and fruitful combination) had as early as 1863 laid it down as the task of science to give "an economic presentation of the facts." By which phrase he meant that science takes account only of the salient features of phenomena, selecting only those which seem strictly serviceable to its own purpose.

SCIENCE "ABSTRACT" OR "SELECTIVE."—Mathematical science (which is the "pure" science *par excellence*) deals not—as is generally supposed—with "things," but with *certain selected aspects* of things. For example, for purposes of arithmetic, every leaf

on a tree is an "unit" (i.e. all are "identical"); but, in point of fact, there exist no two leaves that are alike, as Leibniz, long ago, pointed out. Again, for geometrical purposes two fields may be regarded as of like area; but no two fields are, or ever have been, so.

Thus mathematics—where scientific method is seen at its purest—proceeds by deliberately disregarding individuality; it regards the differences between individuals as non-essential, and irrelevant to its purpose.

Economy of Thought.—And mathematical science is justified in acting in this way. This method, highly abstract as it is—in fact, just because it *is* highly abstract—leads to invaluable results. It's justification is that it is *economical of thought;* disregarding all irrelevant considerations, it is able, by using a short-cut, to reach its goal. Did the mathematician have to take into consideration all the manifold and complex aspects of each concrete "thing" (whether it be leaf, or field, or lever, or what not) with which he deals, he would never be able to cut his way through the jungle. His method of abstraction carries him at once to his goal.

Mach on the "Mechanical View."—Mach's criticism of the mechanical view of nature proceeded upon similar lines. He termed that view "analogical," by which he meant that mechanical "laws of nature" serve us as formal patterns to which the processes of nature may (for convenience sake) be represented as conforming. A clear account, though not a *complete* account, of all physical processes may be given in terms of mechanical "law."

And in fact it remains a question, Mach observed,

" whether the mechanical view of things, instead of being the profoundest, is not in point of fact, the shallowest of all."[1]

Science not Invalid but Incomplete.—This line of criticism of scientific method—i.e. that it deals with abstractions and analogies rather than with *things*, for the sake of economy and convenience of thought—does not deprive science of validity, but only invalidates that superficial dogmatism which had crept into so many investigations. A critical estimate of scientific methods makes it evident how much and how little we have the right to expect from them. They will enable us to give a simple description of *phenomena* as they are seen when reduced to their simplest terms of matter and motion; but of ultimate and final causes they will tell us nothing.

" The system of conceptions by which the exact sciences try to describe the phenomena of nature . . . is symbolic, a kind of shorthand, unconsciously invented and perfected for the sake of convenience and for practical use . . . the leading principle is that of Economy of Thought " (Merz, Vol. III, p. 579).

Boutroux.—This criticism of the mechanical method of dealing with reality was seconded by Boutroux's criticism of the principle of Natural Law. Émile Boutroux (1845–1918)—Professor at the Sorbonne—in two important treatises, examines with great minuteness this aspect of the scientific method. In the earlier of these works, *The Contingency of the Laws of Nature* (1879) he suggests that these laws only give, so to speak, the *habits* which things display. They

[1] Quoted by Ward in *Pluralism and Theism*, p. 103. For a brief yet adequate treatment of Mach's criticisms see Höffding's *Modern Philosophers*, pp. 115–21.

constitute, as it were, " the bed in which the stream of occurrence flows, which the stream itself had hollowed out, although its course has come to be determined by this bed " (Höffding, *Modern Philosophers*, p. 101).

In his *Natural Law in Science and Philosophy* (1895), Boutroux lays it down that the laws of nature, as science describes them, may indeed represent, but are by no means identical with, the laws of nature as they really are. The laws of science are true, not absolutely but relatively, i.e. are not elements in, but symbols of, reality. The notion that everything is " determined " (i.e. the opposite of " contingent "), though absolutely indispensable to the mechanical theory, is nevertheless a way of looking at things rather than a faithful picture of reality—a way in which we see things rather than the way things exist in themselves.

As Boutroux himself puts it in his final chapter : " That which we call the ' laws of nature ' is the sum total of the methods we have discovered for adapting things to the mind, and subjecting them to be moulded by the will."

Results.—Here we have Boutroux approaching very closely to the standpoint of Mach ; indeed the theories of the two men are complementary to one another. For Mach, the mechanical view is a way of looking at things, distinctly useful for understanding and using them—an " economy of thought." For Boutroux, the determinist view is also a way of looking at things that is useful for the same purposes.

Thus the interpretation of reality in terms of mathematics and " unalterable law," is artificial ; an abstract way of thinking which deals not with reality itself but with certain deliberately selected aspects of it.

Rise of a New Philosophy.—This examination of the principles of natural science was the beginning of what afterwards proved to be a revolution in thought. What had been more or less negative criticism in Mach and Boutroux, became the basis of a new philosophy in the hands of William James and Bergson. The names, and even the ideas, of these two original thinkers are familiar far outside strictly philosophical circles, and it will almost be possible to presume upon a certain acquaintance with them on the part of our readers.

William James.—James himself, like Mach, was led to philosophy by the road of scientific investigation. He was a psychologist, and it is as the author of his *Principles of Psychology* that his name will be remembered. This work is notable as containing the first complete application of the Darwinian theory to the evolution of mind. Mental action is there represented as a capacity developed by the organism to enable it to deal with its environment. As an exponent of James puts it :

" The mind, like an antenna, feels its way for the organism. It gropes about, advances and recoils, making many random efforts and many failures ; always urged into taking the initiative and doomed to success or failure in some hour of trial."[1]

The corollary which attaches to propositions of this kind is that knowledge in all its varieties and developments arises from *practical needs*. And the mind (here is an echo of Mach) *selects* those aspects of reality which concern it, and out of that selected material makes up a new (mental) world of its own. Which world is far from being a " picture " of reality, but which is

[1] R. B. Perry, *Present Philosophical Tendencies*, p. 351.

" symbolic " of it (here is another memory of Mach).[1]

This view obviously cuts the ground from under dogmatic materialism. The world which that philosophy regards as *reality*, is, to the critical eye, a collection of abstractions, a mental creation arising out of the practical needs of life.

Henri Bergson.—This line of criticism, that of the evolutionary psychologist, opened up by James, has been carried to extreme lengths by the French philosopher Bergson. " Dig to the very roots of nature and of mind " is his advice. He begins by asking, How, as a matter of history, has human intellect developed ? He then, and then only, proceeds to put the question (which uncritical thinkers always put *first*), What can the intellect do for us ?

His theory of the origin of intellect is the same as that of William James. Life (through the evolutionary process) has produced it. But the conclusion that he draws from this hypothesis is that *the intellect, being itself a product of life, or a form of life, cannot understand the whole of life.* This thesis is elaborated with a wealth of illustration and erudition, both scientific and philosophic, and with a literary grace and charm possible only for a Frenchman, in the famous work *Évolution Créatrice* (1907).

Bergson's Advance on Mach and James.—Those thinkers who had made a serious attempt at a

[1] It is impossible to go deeper into James' " theory of knowledge " without using technical language. A few of his own phrases, however, may help to elucidate things. " Abstract concepts . . . are salient aspects of our concrete experiences which we find it useful to single out " (*Meaning of Truth*, p. 246).

Elsewhere he speaks of them as things we have learned to " cut out " from experience, as " flowers gathered," and as " moments dipped out from the stream of time " (*A Pluralistic Universe*, p. 235).

I owe these quotations to Perry, op. cit.

philosophy of science, had demonstrated that the "mechanical view" of nature was a mental abstraction, and not a complete representation of reality. Such is the debt of philosophy to the researches of Mach, Boutroux, James, and others who worked along their lines.

But it remained for Bergson to demonstrate that the mechanical view was *the inevitable product of the mental processes which we describe by the word "intellect."*

The path which led Bergson to this goal will have to be briefly indicated by us.

Characteristics of the Intellect.—What is the "intellect," to which we look in vain for any *complete* explanation of existence? This is the preliminary question.

Our intellect is, as James had taught, a faculty developed by the evolutionary process in our species to enable it to deal with its *material* environment. And Bergson was the first to point out that as a consequence of its having been developed for this particular purpose (i.e., dealing with a *material* environment), intellect is "never quite at its ease, never entirely at home, except when it is working upon inert matter." If it has to deal with "living" matter, it "treats it as inert, without troubling about the life that animated it."

Such is the first characteristic of the intellect: it feels at home in dealing with dead matter, and living matter it prefers to treat "as inert."

Another characteristic of intellect is that, just as it treats the living as if it were non-living, so it prefers to treat the mobile as though it were motionless. Motion is a thing which the intellect simply cannot grasp; it has to treat it artificially, and represent a

process which in reality is continuous and indivisible, as discontinuous and divisible—a succession of points, out of which no magic can conjure motion. Philosophy became aware of this as soon as it opened its eyes. Hence the paradox of Zeno, that Achilles will never overtake the tortoise, if the latter once gets a start. For if space and time are infinitely divisible (as intellect holds them to be), by the time Achilles has reached the tortoise's starting point, the tortoise has already got ahead of *that* starting point, and so on *ad infinitum ;* the interval between them being endlessly diminished, but never disappearing.

Zeno's paradox arises because of an innate fault in the " intellectual " method of dealing with motion ; a method which Bergson calls " cinematographical," because it regards a single movement as a succession of infinitely small motions. That method is hopeless ; and if we expect to understand motion by its means,

" You will always experience the disappointment of the child, who tries, by clapping its hands together to crush the smoke. The movement slips through the interval, because every attempt to reconstitute change out of states implies the absurd proposition that movement is made up of immobilities." [1]

So that the intellect is best fitted to deal, not with living and moving, but with dead and motionless matter. Of the latter it can form a clear idea ; but in dealing with the former, it finds itself at a loss ; it has to abstract the life and the motion from what lives or moves, and what it cannot grasp, it must treat as non-existent.

Bergson's Anti-Intellectualism.—A penetrating remark of James' will help us, at this point, to under-

[1] *Creative Evolution*, p. 325.

stand the significance for philosophy of these new theories.

"In spite of sceptics and empiricists, in spite of Protagoras, Hume, and James Mill, rationalism has never been seriously questioned, for its sharpest critics have always had a tender place for it in their hearts, and have obeyed some of its mandates. They have not been consistent, they have played fast and loose with the enemy, and Bergson alone has been radical." [1]

Bergson's philosophy is, in fact, a reaction against intellectualism or rationalism; by which is meant the theory that pure reason is competent by its nature to give a complete and exhaustive account of reality.

But according to Bergson, intellect, which is a faculty developed to enable men to subdue and turn to advantage their material environment, and which is, as it were, "fascinated by the contemplation of inert matter," will not reveal the true meaning and nature of existence; it gives us "a translation of life in terms of inertia," and can do no more.

This criticism of the intellect (if it be sound), though it does not invalidate the work of that faculty in its own proper sphere, necessarily involves its discredit as a key to the unlocking of the final mysteries of life and of being. These things lie outside its province. "Whether it wants to treat of the life of the body, or the life of the mind, it proceeds with the rigour, the stiffness, and the brutality of an instrument not designed for such use."[2]

Intellect and Instinct.—Since intellect, by its methods, has induced men to turn their backs on

[1] *A Pluralistic Universe*, p. 237.
[2] *Creative Evolution*, p. 174.

reality, and to look on abstractions instead, the only hope of reaching reality is through an entire change of method and direction. There is, according to Bergson, a non-intellectual variety of knowledge, which (from his point of view) it was a kind of original sin ever to depart from; an original sin which has vitiated all our philosophic thinking from the days of Plato.

This variety of knowledge is more original and fundamental than any which the processes of the intellect, vitiated as these are by certain inherent perversions, can give us. Intellect cannot correct itself; we must call in the aid of some other faculty if we would understand reality.

Bergson finds this faculty in what he calls "instinct." According to him, consciousness has developed in two divergent directions—instinct and intellect; and the difference between these is not one of intensity or degree, but of *kind*.[1]

They are two divergent developments of the same original consciousness, of which common origin they both retain traces, for they are not entirely dissimilar, nor is either of them ever found in a pure state.

Intellect is characteristic of man. Instinct is most highly developed among certain insects, notably the *hymenopterae* (i.e., bees and ants).[2]

Blindness of Intellect.—And the difficulty of the philosophical problem for man arises from the

[1] i.e. Intellect is not (as it is generally represented to be) a developed form of instinct, nor instinct an embryonic form of intellect.

[2] The extraordinary and miraculous phenomena of instinct—especially as celebrated by the distinguished French scientist Fabre—cannot be rightly understood by trying to interpret them in terms of intellect. This is to misread them completely.

anomalies of his own constitution (as interpreted by Bergson in the light of his theory of instinct and intellect). As he puts it :

" There are things that Intelligence (or intellect) alone is able to seek, but which, by itself, it will never find. These things instinct alone could find ; but it will never seek them." (*Creative Evolution*, p. 159).

" If the consciousness which slumbers in instinct were to wake up . . . if we knew how to question it, and if it knew how to reply, it would deliver to our keeping the most intimate secrets of life."

Thus Bergson regards it as impossible that intellect should ever supply us with the complete truth about reality; there are things, e.g. life itself—which altogether elude its grasp.

Intuition.—The situation, however, is not entirely hopeless. Man possesses some measure of instinct, which, when it has " become disinterested, self-conscious, and capable of reflecting upon its object," Bergson calls intuition. By means of this faculty, man is able, darkly perhaps but not ineffectually, to grope his way towards an understanding of reality.

Characteristics of the New Philosophy.—Just as the criticisms of Cusanus and others freed thought from an incubus which seemed likely to prevent its further development, so the movement initiated by Mach and culminating (for the present) in Bergson, has done much to discredit " a certain new scholasticism that has grown up during the latter half of the nineteenth century around the physics of Galileo, as the old scholasticism grew up around Aristotle."[1]

Mechanical determinism was characteristic of much

[1] Bergson's characterisation of Spencerian Evolutionism (*Creative Evolution*, p. 391).

nineteenth-century thought in Europe, not only amongst materialists, but also, in certain cases, amongst idealists as well. Against this aspect of contemporary philosophy, the work of James and Bergson has been a revolt. "Indeterminism," i.e. a belief in the reality of freedom and spontaneity, is an essential part of their system. Their indeterminism is indeed the necessary and logical accompaniment of their anti-intellectualism. For determinism is "a fabrication of the *intellect*," a device which makes reality more manageable, more amenable to logic, more easily systematised. Freedom, like life and motion, eludes the categories of the intellect.

The Mechanical View Assailed.—Such are the lines upon which the new criticism of the mechanical view (the most radical criticism it has had to meet since Kant) proceeds. That view, and the idea of predetermined human action which it involves, is an inevitable product of an intellect naturally incapable of understanding freedom and spontaneity. These, as they destroy its scheme of thought, it casts out as an illusion. "Incorrigibly presumptuous," it insists on interpreting freedom by means of those notions which suit inert matter alone, and therefore always perceives it as necessity. So that all life, far from being subjected to mechanical necessity, as had seemed the inevitable conclusion of naturalistic philosophy, was spontaneity (so to speak) materialised and embodied:

"All the living hold together, and all yield to the same tremendous push. The animal takes its stand on the plant, man bestrides animality, and the whole of humanity . . . is one immense army galloping beside and before and behind each of us in an overwhelming charge, able to beat down every resistance

and clear the most formidable obstacles, perhaps even death." [1]

We have indeed travelled a long way from the austere abstractions of Mr. Herbert Spencer. The new evolutionism is very different from the old. It substitutes for "mechanism" another conception—that of "dynamism," according to which the process of evolution is something undetermined and impredictable—"creative," in fact. The world of organic life is embodied "creative activity," and what this "creative activity" is, we ourselves experience every time we act freely.

Pluralism.—The philosophy of Bergson is a reaction against the mechanical evolutionism (i.e. naturalism) of the nineteenth century. Closely allied with it is another movement of thought, known as *pluralism*. This, too, is a reaction, not so much against naturalism, as against certain forms of idealism.

Idealism, it will be remembered, seeks to interpret reality in terms of mind or spirit. And it does this in certain cases—notably in the case of F. H. Bradley—by regarding all *phenomena* as forms or aspects of the one absolute mind or spirit.

This has seemed to many thinkers a philosophy too abstract and too remote from the world of experience. Hence the question arose whether it might not be possible to interpret nature in terms of mind without being compelled to take refuge in the abstractions of "absolutism." And pluralism is an attempt to solve the problem.

Leibniz Revived.—Leibniz' system of "monads," the nature of which will hardly have been forgotten, has been the model to which philosophers have looked

[1] *Creative Evolution*, p. 286.

in constructing their new system. And the "Monadology" may be taken as the type to which all modern attempts to construct a "pluralistic" philosophy more or less conform.

The essence of "pluralism"—whether Leibnizian or other—lies in the proposition that there exists an indefinite variety of beings, some higher, some lower than ourselves. The pluralist agrees with the idealist in declaring that the essence of reality is *spirit*, but differs from him in declining to allow independent spirits to be absorbed by an "all-devouring Absolute."

Pluralism and Theism.—William James himself, in a work *A Pluralistic Universe* (1909) outlined a philosophy of spirit radically opposed to "Absolute Idealism," which he subjects to a good deal of criticism. Another important work, written from a similar point of view, is Professor James Ward's *Pluralism and Theism* (1911).[1]

With regard to modern pluralism, the notable features are two. In the first place, it is a philosophy of *personality*, which it regards as the most fundamental form of reality; and also, that it is *theistic* in a sense peculiar to itself. It believes in a God who may be termed the supreme monad, i.e. the head of a system of monads; but whose power may be said, in certain respects, to be limited. And indeed some such position seems to be the *logical* conclusion that follows from the premises with which pluralists start, and also (we may add) from the facts of experience.[2]

Pluralists unite in affirming that their God is (what

[1] Other notable pluralists in England are F. C. S. Schiller and Dr. MacTaggart.

[2] The *logical* conclusion, we say, though this may not be the ultimate truth about the matter. The most attractive theories are often the most superficial.

they deny the idealistic Absolute to be) the God of the religious consciousness. James elaborates this thesis with his usual resourcefulness and skill. The controversy, however, is one into which it does not seem necessary for us to enter. Pluralism and idealism are or may be both definitely spiritual philosophies, and perhaps they appeal to different types of mind. We, at any rate, shall not undertake to judge between them. Both alike are preferable to dogmatic naturalism.

CHAPTER XII

SOME RECENT TENDENCIES IN SCIENCE

Scientific Method.—In the last chapter, attention was drawn to some important attempts to supply science with a sound philosophy of method, i.e. to give a critical account of those processes, logical and otherwise, which issue in what is called "scientific knowledge."

The general results of these attempts was to re-enforce the validity of sound scientific method *within its own sphere*. But, at the same time, it was felt likely to prove an unreliable guide elsewhere.

The New Physics.—Meanwhile, while the logic of science was being scrutinised by philosophers, scientific research was itself going steadily forward, and fresh discoveries of a highly important nature were coming to light. In the sphere of physical science, more especially, revolutions of Copernican proportions quietly took place.

The whole subject of physics is of a highly technical nature, quite unsuitable for discussion here, and, indeed, entirely beyond the range of the present writer.

To indicate the nature of the discoveries which were made, however, involves few technicalities: though the method by which these were demonstrated and established must remain obscure to all but mathematical specialists.

Collapse of the Atomic Theory.—Dalton's theory of atoms was described in a previous chapter. It is hardly possible to exaggerate the importance attached by materialists, ever since Lucretius, to the conception of indivisible and indestructible atoms. It was regarded as integral to materialism, and never was the prestige of this theory higher than during the nineteenth century, which "will go down in scientific history as the era of the atomic theory of matter."

Towards the close of the century, the theory collapsed. Atoms were found to be neither indivisible nor indestructible; and the process of the breaking up of the atom has actually been observed.

As is very generally known, it is in the case of a particular element, *radium*, that this phenomenon occurs. That substance, wherever it occurs, is undergoing a continual process of disintegration; radium atoms are continually breaking up into more elementary bodies.

Were it not for the fact that radium itself is the product of the disintegration of another element, it would be impossible to account for its survival. It continually evaporates (the life of radium is only 2500 years) but it is as continually renewed by the infinitely slower disintegration of uranium.

Electrons.—The particles into which the radium atom disintegrates are known as *electrons*. And according to the new theory of matter, not only radium atoms, but the atoms of all the other elements (hitherto regarded as irreducible) are composed of electrons, differently grouped. The radium atom is infinitely more unstable than the atoms of the other elements; but it is possible to conceive of the disintegration of these also. They are all alike composed of the same

elementary particles—different compounds of the same primitive substance.

MATTER A FORM OF ELECTRICITY.—And the most remarkable part of the new theory is that these primitive particles of which material atoms are composed, are themselves the units which constitute what we call "electricity." Thus matter and electricity are now expressed in common terms—they are regarded as different manifestations of the same substance. And of the two conceptions—matter and electricity—it is the latter that is the more simple and fundamental. As a high authority puts it:

"Whereas through the greater part of the nineteenth century, 'matter' was the concept which was looked upon as fundamental in physical science, and of which there was a curious accidental property called electricity, it now appears that electricity must be more fundamental than matter, in the sense that our more elementary matter must now be conceived as a manifestation of extremely complex electrical phenomena."[1]

As to whether the electrons themselves, in their turn, are irreducible units, there may be room for doubt. According to Professor J. Larmor the electron is "a nucleus of intrinsic strain in the ether."[2] If this view be sound, matter may be regarded as a manifestation of the ether; "a persistent strain-form flitting through an universal sea of ether." As to the nature of the ether, that is a subject of speculation among physicists. It is variously described as an "elastic fluid," and as "a fairly close packed con-

[1] Professor Cunningham in Pearson's *Grammar of Science*, Part I, p. 356.

[2] Quoted by W. C. D. Whetham in his *Recent Development of Physical Science*, p. 280. No reference is given by him.

glomerate of minute grains in continual oscillation." [1] It may indeed be said that modern physical theories have succeeded in reducing matter, which seems comparatively knowable, to a substance of which little is known and, therefore, of which much can be postulated; it can be called sub-natural, or super-natural, according to taste.

We may, perhaps, satisfy ourselves with the words of Professor Tait: "We do not know, and are probably incapable of discovering, *what* matter is"; and "The discovery of the ultimate nature of matter is probably beyond the range of human intelligence." [2]

And yet we can agree with Mr. Arthur Balfour when he says [3] "we know too much about matter to be materialists." That, in itself, a generation ago would have been regarded as a large admission from the standpoint of physical science.

Results of the New Physics.—The reduction of knowable and tangible matter to intangible electricity or unknowable ether may not seem to be much of an advance from the point of view of those who are interested in establishing a spiritual theory of the universe. But electricity is a species of energy which can be expressed in terms of will—which is the only kind of energy that we are acquainted with at first hand. "What is objectively energy is subjectly will; or, in other words, manifested energy is the visibility of will." [4] And so far as the "unknowable" ether is concerned, it gives less scope to those powers

[1] One theory attributes the existence of matter to occasional misfits among these grains.

[2] Quoted by Bishop Mercer. *Problem of Creation*, Appendix B.

[3] In *Theism and Humanism.*

[4] Mercer, op. cit., p. 106.

of dogmatism, the exercise of which characterised scientists of the old materialistic school; and it is the habit of oracular pronouncements which does the harm, by rendering any intellectual or spiritual progress impossible. In any case, whatever be the substitute which is to replace the old theory, we may congratulate ourselves, with Professor J. S. Haldane, that "we have parted once for all with the notion of a real and self-existent Material universe; and we must remember where we now are." [1]

The New Biology.—But if the results of the new physics have been disturbing to those who had hoped that materialism was a finally established theory, the results of recent biological research have been equally embarrassing to them. The anti-mechanistic trend of recent biological theory is only too evident. The organism is regarded no longer by the majority of biologists as fully explicable in terms of mechanics and chemistry. To quote Professor Haldane again, "The main outstanding fact is that the mechanistic account of the universe breaks down completely in connection with the phenomena of life . . . In the case of life, the facts are inconsistent with the physical and chemical account of phenomena." [2]

The organism can no longer be regarded as even an extremely complex kind of machine; that word will not cover the facts, and biologists are compelled to look elsewhere for a less misleading terminology. To describe the organism as a machine, is to give to that word a very comprehensive connotation. For the organism is a machine different in kind from any that has been constructed by man; it is "a self-stoking,

[1] *Mechanism, Life, and Personality* (1913), p. 81.
[2] Op. cit. pp. 64, 66.

self-repairing, self-preservative, self-adjusting, self-increasing, self-producing engine." [1]

The Researches of Driesch.—Just as modern physics is concerned with the infinitely small—the ultra-microscopic, in fact—so modern biologists are concentrating attention upon microscopic organisms, where life is seen at its lowest terms, and where (if anywhere) they may expect to discover what are the *differentia* of life, i.e. what are the qualities that distinguish living organic from inorganic matter. Perhaps the most notable of the researches conducted in this sphere, of recent years, have been those of Professor Driesch, who expounded his results in the *Gifford Lectures* for 1907-1908 (*The Science and Philosophy of the Organism*).

The phenomena upon which Driesch lays considerable stress are those which occur upon a division of certain living embryos. An embryo, when cut in half, displays remarkable powers of self-adjustment and continued development. Each half can, as it were, regulate itself, and make a fresh start; a process which results in two self-contained organisms, though of smaller size than would have resulted from a single undivided organism. The cells which compose the organism seem able to adapt themselves to whatever demands are made upon them. Like workmen building a bridge, all of them *can* do every single act —if need arise—and the result of their labours is a perfect bridge, even if some of the workmen fall sick or are killed or injured in an accident.

Driesch sums up the results of his researches by saying:

[1] Professor J. Arthur Thomson, in an article entitled, "Is there one Science of Nature?" (*Hibbert Journal*, Oct., 1911).

" There is something in the organism's behaviour—in the widest sense of the word—which is opposed to an inorganic resolution of the same (i.e. to its complete expression in terms of chemistry and physics), and which shows that the living organism is more than a sum or aggregate of its parts ; that it is insufficient to call the organism ' a typically combined body ' (i.e., a machine), without further explanation." [1]

THE PROBLEM OF LIFE.—The problem is : What is it in an organism which causes it to behave in a fashion so impossible for any machine ? To answer this question satisfactorily would be to have solved the mystery of life. Biologists do not answer the question ; they do not say what this peculiar potency is, but they give it a name. Driesch calls it *entelechy*, i.e. " purposiveness," and he also speaks of *psychoids*, i.e. " primitive minds." Names do not carry us very far ; but the mere fact that biologists have gone to the trouble of providing a name, is important. It constitutes an admission on their part that there is something mysterious about the organism ; for it has been a principle of modern science since the days of Galileo never to appeal to mysterious causes if known ones can be found. The *deus ex machina* method seems to them fundamentally unsound, and so it is. If every difficulty were considered solved merely by the word " mystery," knowledge would never advance. Labelled ignorance is still ignorance. It is not names, but things that are important. But in this particular instance the application of the name *entelechy* indicates that, in the opinion of such an authority as Driesch, at any rate, something exists which no merely physical or chemical term can completely describe. And

[1] *The Science and Philosophy of the Organism*, Vol. II, p. 338.

Driesch is typical of the trend of much modern biology. It is only the very extreme optimists who now look for a final explanation of the living organism in terms of physics and chemistry.

Results of the New Biology.—But if life resists all attempts to reduce it to matter and motion, we are confronted with the breakdown of the mechanical theory of the universe, which has been slowly but progressively elaborated since the days of Leonardo da Vinci, and applied impartially to the organic and the inorganic spheres. But this ultra-dogmatic theory now seems too cramped to contain the facts; even scientists resent the claims of materialist-mechanical orthodoxy. Some indeed adopt not merely a critical, but a provocative attitude, and seek to discredit the prestige of mechanics. Professor J. S. Haldane not only vindicates the freedom, but prophesies the speedy advance of biology to a position of pre-eminence. Not only are biological phenomena irreducible to terms of mechanics, but it is mechanics that will have to be re-interpreted in terms of biology.

"It is at least evident that the extension of biological conceptions to the whole of nature may be much nearer than seemed conceivable even a few years ago. When the day of that extension comes, the physical and chemical world as we now conceive it—the world of atoms and energy—will be recognised as nothing but an appearance . . . it will stand confessed as a world of abstractions like that of the pure mathematicians." [1]

The New Psychology.—Not only physical and biological, but psychological science will contribute very largely to the reconstruction of view which is now taking place. Particular attention is due to those

[1] Op. cit. p. 101.

branches of psychology which deal experimentally with the subconscious, with instincts, with the phenomena of thought transference, psychotherapy, and of so-called "spiritualism." In none of these spheres can research yet be said to have proceeded far enough to justify the luxury of dogmatising over results. Considerable confusion of opinion may still exist, but it is now generally recognised that there is a wide sphere of research in psychical regions which is practically a *terra incognita*. And those most competent to judge of results seem to be most cautious in their statements. We are in the position of not knowing what a day may bring forth; and an expectant agnosticism with regard to many problems is perhaps the right attitude to adopt. The somewhat arrogant negations of the last generation are now out of place; they were never, in the strict sense, scientific, and they are now demodés. It is extremely difficult to imagine a return to the view which dismisses "mind" from the universe as being an obscure by-product of matter, or a comparatively insignificant "epiphenomenon" accompanying certain obscure chemical or mechanical processes. The old theories, gratifying in their simplicity, will no longer cover the facts.

Psychical Research.—One particular branch of experimental psychology, which has attracted a large measure of public attention, calls for a few remarks. The attempt has been made to give experimental proof of the existence of "disembodied spirits," human or otherwise. The whole subject, exceptionally exposed as it is to the influence of prejudices of various kinds, requires to be treated with great caution, and it is inadvisable, in the present condition of the problem, to make dogmatic statements in any direction.

What appears to be certain is that the occurrence is well established of various *phenomena* which it is extremely difficult to explain in accordance with our present knowledge of matter, of space, or of mental action.

The occurrence of such phenomena is no longer disputed; but it is over the *explanation* of them that controversy is active. And it seems quite certain that the very least in the way of concessions that these new facts will force from conservative scientists is *a radical revision of current notions of the range of human mental action.* The mind is evidently capable of producing certain effects—even upon matter—which would have seemed incredible a short while ago.

So much is the least that may be expected. But in the view of many competent and highly scientific observers, some far more radical revision of our notions may be necessary. Some scientists of good repute (e.g. Sir Oliver Lodge, in England, and Flammarion and others on the Continent) are convinced that the facts can only adequately be explained by reference to another world—interlocked, as it were, with this.[1] And it has to be admitted that this, what may be called more "advanced" explanation, is more in accordance than the other with a rather universal tradition or assumption of mankind in all ages.

It will be easily seen that the whole subject is one of the most extreme difficulty. There is a general hesitancy in accepting what is called the "spirit hypothesis," so long as any other can be found; a

[1] Other names of distinguished scientists holding this view are: Sir W. Crookes the Physicist and Sir W. F. Barrett, F.R.S., in England, Dr. Hodgson and Prof. James Hyslop in America, Lombroso in Italy, Richet in France.

hesitancy justified in view of the extreme complexity of the world we live in (where so much is even yet unknown), and in view of the great difficulty which there seems to be in adducing *exact* proofs of the "spirit theory."

A REASONABLE ATTITUDE.—We shall, no doubt, be wise at present to refuse to cry "Proven," and whilst admitting that all things are possible—perhaps even probable—to await with patience the results of further investigation.

It has to be admitted that, while many people are superstitious and easily attracted by picturesque theories, there are others who are as prejudiced, in their way, against new ideas, as were those astronomers who, being committed to Ptolemaic views, refused to look through Galileo's telescope. It is not only theologians who have, in the history of thought, been guilty of obscurantism. In the early days of hypnotic experiments the scientific world in general "poohpoohed" the idea of hypnotism; and it took a considerable time before it would allow itself to be convinced that such a thing was possible. Facts, in the end, were too strong even for prejudice. It is facts, eventually, that decide matters; and, no doubt, before a very long period has elapsed, sufficient facts will have accumulated to allow the scientific world to form more definite and better-grounded opinions than are possible to-day.

Meanwhile, the ordinary man will do well to remember that the universe is really a very wonderful place, and that the knowledge of the wisest of us about it can only be described as infinitesimal. The traditions of nineteenth-century materialism are still strong amongst us, even with those who are least conscious of them.

But there are more things in heaven and earth than are dreamt of in that philosophy.

RESULTS.—These new conceptions of matter, of life, and of mind, which are the products of the new physics, the new biology, and the new psychology respectively, may be confidently left to themselves to work out their own salvation. They have the strength of youth. What is evident is that we have crossed the threshold of a new era in the history of science. The outlook of the future will be as different from that of the recent past as was the new science of Galileo, Descartes, and Newton from the dogmatic but fanciful notions which the Scholastic theologians had borrowed from Aristotle, and sought to impose as a permanent revelation.

The current of thought is never stayed. The future is obscure, but one thing is certain, that the coming generations will see catastrophic changes in the outlook of science ; and the materialistic and mechanistic *weltanschauung*, which lately seemed so formidable, may soon become as superannuated as astrology. The theory which overshadowed the religious life of a century, and which had become more and more menacing as scientific knowledge increased in extent and popularity, has fallen into discredit. Its prestige will not revive.

CHAPTER XIII

SOME FINAL CONSIDERATIONS

VALUE OF THE HISTORY OF PHILOSOPHY.—It may perhaps be felt that our protracted excursion has not advanced us far beyond the position at which we stood in the opening chapter. Indeed, the history of philosophy may seem not to establish any very definite conclusions; and those who study the subject in the hope that it will supply them with material for dogmatising are likely to be disappointed. We have to reconcile ourselves to the fact that the riddle of the universe has as yet received no final solution at the hands of the metaphysicians. It is only too evident that, as the poet says:

> "Our little systems have their day,
> They have their day, and cease to be."

And yet it would be an error to suppose that this lack of finality about philosophical opinion, or the want of unanimity among philosophers, indicates that no progress has been made. There are certain landmarks in the history of philosophy—such as Kant's *Critique of Pure Reason*—which mark a point behind which we shall not again regress (assuming that our culture and civilisation is preserved). Even if we have not grasped the whole truth about things yet, we are still justified in assuming that we are gradually, if painfully, getting nearer to the goal.

But surely we are entitled to believe that it is not the crude appetite for metaphysical dogma that attracts men to the history of philosophy. Its fascination rather resembles that of the history of religion: both are, as it were, Odyssies of the human spirit; nor is there any activity of man that has not its appeal to the human heart: for *cor ad cor loquitur*.

And, again, we should reflect that those who ask for final conclusions, forget that the *search* for truth may be, in and for itself, of the highest spiritual value. The best starting-point for the history of philosophy is a famous passage from Lessing.

"Not the truth which is at the disposal of every man, but the honest pains he has taken to come at the truth make the worth of a man. For not through the possession, but through the pursuit of truth do his powers increase, and in this alone consists his ever-increasing perfection. Possession makes us quiet, indolent, proud. . . . If God with all truth in His right hand, and in His left the single, unceasing striving after truth, even though coupled with the condition that I should ever and always err, came to me and said, 'Choose!' I would in all humility clasp this left hand and say, 'Father, give me this! Is not pure truth for Thee alone?'"[1]

But there is another respect in which some knowledge of the history of thought may be an important advantage. It may not bestow upon us the liberty of dogmatising ourselves, but it does bestow upon us a certain imperturbability in the face of the dogmatisms of others. Airs of systematic omniscience, "the pride of a pretended knowledge," will leave us unimpressed

[1] From his *Duplik*. Quoted by Höffding, *History of Philosophy*, Vol. II, p. 21.

and undismayed. The latest pretentious product of popular philosophy will, in the majority of cases, be recognised as an old heresy in a new garb; "new" thought will not impress (at least, by its novelty) those who know that it is old.

But it is against the crudities of materialistic naturalism that even a slight acquaintance with the history of ideas will form an antidote. The various exposures of it, from Hume and Kant to Bergson, will be to some extent familiar; and it will be a recognised fact that its chief popular attraction is at the same time its chief philosophic weakness; and this is that it is nothing more or less than a systematisation of the prejudices of common sense. "As a theory of first principles, the best that can be said of its pretensions is that they are ridiculous." [1]

SOME DEDUCTIONS FROM HISTORY.—But, it may be asked, what definite conclusions have the foregoing chapters to offer? Some, if we are not mistaken, of a genuinely positive character. It will be necessary to recall certain facts and reflections to the minds of our readers.

In the early chapters we noted the rise of an independent science, and the collapse of the medieval world view with which popular religious notions were associated so closely, that many conservative thinkers expected to see both involved in a common ruin. Science seemed to threaten the existence of a religion bound up with conceptions of space and of force which were being brought into discredit.

These misgivings turned out, however, to be ill-founded. Certain advantages, no doubt, of simplicity

[1] F. H. Bradley on "Phenomenalism" (*Appearance and Reality*, p. 126).

and definiteness, which had belonged to the old notions, had been irrecoverably lost ; but thinkers like Giordano Bruno showed that the conception of an infinite universe was by no means hostile to religion ; but that, on the contrary, it might be a conception of the highest spiritual value. Such are the sentiments expressed in some sonnets which precede Bruno's dialogue " On the Infinite Universe."

" It seemed to Bruno as if he had never breathed freely until the limits of the universe had been extended to infinity, and the fixed spheres had disappeared. No longer now was there a limit to the flight of the spirit, no ' so far and no further ' ; the narrow prison in which the old beliefs had confined men's spirits had now to open its gates and let in the pure air of a new life." [1]

The scientific did not seem to him incompatible with a fundamentally religious conception of the world, at least for those who were not afraid " to take ship upon the seas of the infinite."

Dangers of the " Mechanical View."—Thus it was not *science* that was hostile to religion. This was not the case until science began to be associated with a certain fairly definite philosophy of a mechanistic, and later of a materialist, description. Religion could not have survived the final establishment of such a philosophy as this, for the indispensable element in a religious attitude of life is the idea that *somehow there lies behind things a power or essence that has something in common with our own natures*—something that can, without an abuse of language, be called personal. Any philosophy that rules out this idea creates an atmosphere in which religion cannot breathe.

[1] Höffding, op. cit., Vol. I, p. 129.

And it was just this atmosphere that the mechanistic view, unless amplified by considerations of another kind (as it was e.g. in the case of Spinoza) tended to create.

The "Mechanical View" Never Unchallenged. —And with regard to this mechanistic philosophy, we have to observe that it never seems to have commended itself, as a final and complete solution, to the best minds. In the seventeenth century, it will be remembered, the mechanical conception was transcended (though in entirely different ways) by Spinoza and by Leibniz, and the religious consciousness of the age, in the person of Pascal, protested against it.

And although, during the eighteenth century, this philosophy persisted, and was considerably reinforced (with the help of further discoveries in the realm of physics) by the school of Holbach and Diderot, yet it had still to face the radical criticism of Kant. This criticism, as we shall remember, indicated that the mechanical view is a way in which the human mind—owing to its constitution—regards phenomena. If it is to understand them, the human mind cannot help viewing them in that fashion ; it must subject things to the mould in which all its thought is cast. Mechanism is the *medium* through which the mind understands phenomena. It belongs not to the things in themselves, but to our way of understanding them. And attached to this radical criticism of mechanical notions, was an idealistic philosophy of the most genuinely religious and spiritual character. Kantian idealism is one of those contributions to human thought behind which we shall not again regress. It is a phenomenon of incalculable value and importance.

The immediate results of Kant's critical idealism

was a luxuriant growth of a spiritual type of philosophy upon the ground he had cleared and prepared. Romanticism may be regarded as a revolt of those sides of human nature upon which the tyranny of mechanism pressed hardest—religion, speculation, poetry, music, art. "You may expel nature with a pitchfork, but she persists in returning." The Horatian remark is true also of the human mind; you may try to weed out religion and poetry, but your success will only be temporary; for nature herself is more persistent than the most earnest of materialists and (what is more) she outlives him.

And with regard to the materialist or mechanistic view, it is highly interesting to note that its greatest attraction has consisted in something which, strictly speaking, is not its own property. In the eighteenth century in France, and in the nineteenth century in Germany and England, the popularity of this view was derived from its altogether illegitimate association with a high moral and social idealism, which (it is only too evident) had been borrowed—without sufficient acknowledgment—from the Christian tradition. The rather self-conscious atheism (for instance) of Shelley or Byron—which they had presumably derived from Diderot and his contemporaries—was less a denial of God than an affirmation of the rights of humanity. This generous philosophy of revolt from contemporary tyranny and pharisaism is atheistic only in name. The callous and cynical powers, both political and ecclesiastical, that were the object of their bitter attacks were the embodiments of atheism, for "He alone is the true atheist to whom the predicates of the Divine Being, e.g. love, wisdom, justice, are nothing."[1]

[1] Feuerbach, *Essence of Christianity*, p. 21.

THE PRESENT SITUATION.—During the nineteenth century the mechanical view received some accession of strength owing to the reduction of biology to what seemed like subjection. But, at the same time, an idealistic philosophy had taken a strong hold in England, and towards the end of the century critical students of scientific method cast doubt upon the *finality* of the mechanical view. They regarded it as artificial, abstract, and symbolic only of reality. This critical movement may be associated with the names of Mach, Boutroux, and (perhaps above all) of Bergson.

Moreover, towards the end of the century, a number of new facts in physics, biology, and psychology came to light and tended to discredit the mechanical view as a final explanation of reality. The indestructibility of matter, even the conservation of energy and of mass (corner stones of the mechanico-materialist view) began openly to be questioned, not by metaphysicians, but by men of science themselves. The foes of materialism were those of its own household.[1]

Thus assailed from without by the philosophers, and from within by the scientists themselves, the mechanical view, after a reign of three centuries (disturbed though these may have been by successive rebellions) seems destined to disappear. It may indeed subsist as an approximate and convenient way of regarding reality, of which it will no longer pretend to give an absolute and complete account. It will continue to reign as a constitutional monarch, but the days of its tyranny are at an end. And it is not unlikely that future

[1] We now learn that conceptions of space of a highly unorthodox character are entertained by physicists and mathematicians, as the result of recent researches in the sphere of the gravitation of light.

generations will look with surprise upon our respect for a theory which to them will wear something of the same aspect as medieval astrology now presents to ourselves.

Some Deductions—If the history of thought showed no other results than the impaired prestige of naturalism, it would be worth attention and study. The facts undoubtedly compromise that prestige, for history indicates that at no period has naturalism been able to impose itself permanently. If there has been a movement in that direction, it has elicited a corresponding reaction. The human mind seems unable to remain satisfied with the negations which systematised common sense seeks to impose upon it. There is an instinctive appetite in humanity for a spiritual view of things, and Sabatier was undoubtedly right in observing that mankind is "incurably religious." Neither Hobbes, nor Holbach, nor Büchner, with the best will in the world, can exorcise from the human heart that instinct which seeks for itself personal relations with the universe—which sees a mind behind phenomena. This is one of those instincts of which it is true that the more you repress them the more insurgent they become—they will have their way in the end.

Thus naturalism, blind to the mutilation of our nature of which it is guilty, is psychologically unsound. And yet, our nature is not so easily mutilated after all. Naturalistic dogmatism has it in its power to create an atmosphere which is unhealthy for religion, but that growth has its roots too deep for it to be easily destroyed. Springing as it does from the depths of our nature, it will prove as permanent as humanity itself.

This is not to deny that this type of dogmatism may

do, as it actually has done, a great deal of harm. A plant may be strong and vigorous, but under unceasing bitter weather, it will tend to become discouraged. Otherwise it would not be worth while to write criticisms of naturalism.

FREEDOM.—Perhaps the best service we can do is to protest against indulging an appetite for negative dogmatism. Such an attitude is a negation of the freedom of thought. And it is in an atmosphere of freedom that both religion and science flourish best. A hard and fast naturalistic outlook may prove, and actually has proved, an incubus from which even scientists themselves may pray to be delivered.

Nor has religion always enjoyed that full measure of freedom which is indispensable to its vigorous life. The curious and sad fact is that the human mind seems to delight in creating prisons for itself. The scientific spirit created a mechanico-materialistic scheme which has ended by becoming the enemy of scientific research, and which (besides this) asks, as a sacrifice, the mutilation of our spiritual instincts.

And so with religion. The religious instinct (like the scientific) tends to create its prisons. The pride of a pretended knowledge reduces to a mechanical scheme the mysteries of life and death ; it provides superficial standardised solutions for the problems of existence.

Of course, it is clear enough, that in religion as in science, we cannot, even if we would, start each of us from the beginning. We have to accept and to revere the riches of knowledge and experience accumulated by those who have gone before. And yet, in religion as in science, life consists in movement ; we must go forward. The past may be an inspiration, but it must not be the limit of our thought, or it becomes an incubus. The

glance must be forward not backward; the stream flows, and we are borne on its bosom. Humanity, like an explorer, has its face set towards the unknown. Both science and religion are children of freedom, without which the creative spirit in man is crushed.

And here, with this note of warning (though perhaps rather of encouragement) we may close.

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